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Forty-seventh Annual Catalogue

OF THE

UNIVERSITY OF KANSAS

For the Year
1912-'13

And Announcements
for the year 1913-'14

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LAWRENCE, KANSAS

APRIL, 1913

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UNIVERSITY CALENDAR.

Academic Year, 1912-'13.

Jan. 3, Friday—Christmas recess ends.
 Feb. 3 to 7, Monday to Friday, inclusive—Semiannual examination.
 Feb. 10, Monday—Second semester begins.
 Feb. 12, Wednesday, Lincoln's birthday—Legal holiday.
 Feb. 22, Washington's birthday—Legal holiday.
 March 21 and 24, Friday and Monday—Easter recess, begins 5:30 P. M. Thursday.
 April 11, Friday—First half-semester ends.
 April 14, Monday—Second half-semester begins.
 May 30, Friday, Memorial Day—Legal holiday.
 June 2 to 6, Monday to Friday, inclusive—Annual examinations.
 June 8, Sunday, 8 P. M.—Baccalaureate sermon.
 June 9, Monday, 8 P. M.—Organ recital.
 June 10, Tuesday, 10:30 A. M.—Annual Alumni address.
 June 10, Tuesday, 8 P. M.—Chancellor's reception.
 June 11, Wednesday, 10 A. M.—Commencement exercises.
 June 12, Thursday—Opening of Summer Session.

Academic Year, 1913-'14.

Sept. 16, 17, Tuesday and Wednesday—Examination of candidates for admission, and presentation of certificates from high schools, academies, and other institutions.
 Sept. 17, Wednesday—First semester begins.
 Sept. 18, Thursday—Class work begins.
 Sept. 19, Friday—General assembly of students and annual address, in University Hall, at 10 A. M.
 Nov. 24, Monday—Second half-semester begins.
 Nov. 27 and 28, Thursday and Friday—Thanksgiving recess, begins Wednesday noon.
 Dec. 16, Tuesday, 8 P. M.—Christmas concert by Music department, School of Fine Arts.
 CHRISTMAS RECESS—Saturday, Dec. 20, to Friday, Jan. 2, inclusive, begins noon Friday, Dec. 19.
 Jan. 2, Friday—Christmas recess ends.
 Feb. 2 to 6, Monday to Friday, inclusive—Semiannual examinations.
 Feb. 9, Monday—Second semester begins.
 Feb. 12, Wednesday, Lincoln's birthday—Legal holiday.
 Feb. 22, Washington's birthday—Legal holiday.
 April 10 and 13, Friday and Monday—Easter recess, begins 5:30 P. M. Thursday.
 April 10, Friday—First half-semester ends.
 April 13, Monday—Second half-semester begins.
 June 1 to 5, Monday to Friday, inclusive—Annual examinations.
 June 7, Sunday, 8 P. M.—Baccalaureate sermon.
 June 8, Monday, 8 P. M.—Organ recital.
 June 9, Tuesday, 10:30 A. M.—Annual Alumni address.
 June 9, Tuesday, 8 P. M.—Chancellor's reception.
 June 10, Wednesday, 10 A. M.—Commencement exercises.
 June 11, Thursday—Opening of Summer Session.

CHRONOLOGICAL TABLE.

-
- 1855.—(December.) A university provided for in the first constitution of Kansas territory, at Topeka.
1857.—(June.) State University at Lawrence provided for by free-state legislature, Topeka.
1857.—(September.) Seminary of learning provided for in Lecompton constitution.
1858.—(April.) System of public instruction, including a university department, provided for in Leavenworth constitution.
1859.—(July.) State University provided for as at present, in Wyandotte constitution, now the constitution of the state of Kansas.
1861.—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
1863.—Lawrence selected as location for the University of Kansas.
1864.—The University organized by the legislature.
1865.—March 21, first meeting of the Board of Regents.
1866.—July 19, Regents elected the first Faculty of the University, consisting of Elial Jay Rice, A. M., David Hamilton Robinson, A. M., and Francis Huntington Snow, A. M.
1866.—North College erected.
1866.—September 12, first session of the University opened at North College.
1870.—Department of Engineering organized.
1872.—Fraser Hall erected and occupied.
1876.—Normal Department established.
1877.—Department of Music organized.
1878.—Department of Law organized.
1883.—Medical Hall (old Chemistry Building) erected.
1885.—Department of Pharmacy established.
1885.—Normal Department discontinued.
1886.—Snow Hall erected.
1891.—The Preparatory Department discontinued, the work being left to the high schools of the state.
1891.—The University reorganized and Schools of Arts, Engineering, Law, Fine Arts and Pharmacy established.
1894.—Spooner Library erected.
1894.—Chancellor's residence erected.
1895.—Blake Hall erected.
1896.—The Graduate School established.
1899.—The Fowler Shops erected.
1899.—The School of Medicine established.
1900.—Chemistry and Pharmacy Building erected.
1902.—Natural History Museum Building erected.
1904.—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
1904.—Green Hall erected.
1905.—Full four-year course in medicine established.
1905.—Eleanor Taylor Bell Memorial Hospital erected.
1906.—Robinson Auditorium-Gymnasium erected.
1906.—Clinical Laboratory erected.
1906.—Nurses' Training School established.
1907.—Civil and Mechanical Engineering Building erected.
1908.—Mining Engineering Building erected.
1908.—Power plant and laboratories erected.
1909.—The School of Education and The Division of University Extension established.
1911.—First wing of Administration Building erected.
1911.—State Hospital erected at Rosedale.
1911.—Clay-working laboratory erected.

GENERAL INFORMATION.

THE GENERAL CATALOGUE of the University of Kansas is issued in the spring of each year. A copy will be sent free to any one desiring it.

SEPARATE CATALOGUES of the schools of the University are issued at the same time with the General Catalogue of the University. Separate catalogues will give complete information as to each school or department of the University. Prospective students of the Graduate School, the School of Engineering, the School of Fine Arts, the School of Law, the School of Pharmacy, the School of Medicine, the School of Education, the University Extension Division or the Summer Session will ask for the separate catalogue of the desired school. They are issued free of cost.

THE ALUMNI CATALOGUE of the University is issued at intervals, giving a list of the graduates of the University. Copies are sent free to graduates and former students of the University.

A HIGH-SCHOOL MANUAL is issued at intervals, giving in detail the requirements for entrance to the different schools of the University, together with suggestions as to methods, courses of study, laboratory equipment, and a list of accredited high schools.

SPECIAL BULLETINS are issued during the University year covering topics of importance to the University and the schools and colleges of the state.

THE UNIVERSITY CALENDAR is posted weekly upon the local bulletin board, announcing lectures, concerts, prizes, and other matters of public interest under the auspices of the University, and as soon as possible will be printed in sufficient numbers for distribution, on request, to high schools of the state and to graduates and former students.

For catalogues and other information, address

THE REGISTRAR,

UNIVERSITY OF KANSAS,

Lawrence, Kan

PART I.
Officers of the University.

(1)

BOARD OF REGENTS.

CHANCELLOR FRANK STRONG, Lawrence.....	<i>Ex officio.</i>	
* HON. WILLIAM A. WHITE, Emporia.....	Term exp.	1913
HON. LEON S. CAMBERN, Erie.....	" "	1913
HON. CHARLES F. FOLEY, Lyons.....	" "	1913
HON. SCOTT HOPKINS, Horton.....	" "	1913
HON. JAMES A. KIMBALL, Salina.....	" "	1913
HON. RODNEY A. ELWARD, Castleton.....	" "	1913
† HON. GEORGE W. MARBLE, Fort Scott.....	" "	1913

Officers of the Board.

CHANCELLOR FRANK STRONG...*President, ex officio.*
 SCOTT HOPKINS*Vice President.*
 RODNEY A. ELWARD.....*Secretary.*

COMMITTEES OF THE BOARD.

Buildings:

Messrs. WHITE, HOPKINS and FOLEY.

Grounds:

Messrs. KIMBALL, WHITE and ELWARD.

Auditing:

Messrs. ELWARD, WHITE and CAMBERN.

Clinical Department, of School of Medicine:

Messrs. FOLEY, KIMBALL and HOPKINS.

Finance:

Messrs. CAMBERN, ELWARD and FOLEY.

Organization and Policy:

Messrs. HOPKINS, CAMBERN and KIMBALL.

* Resigned November, 1912.

† Appointed December, 1912.

BOARD OF REGENTS.

March to July 1, 1913.

CHANCELLOR FRANK STRONG, Lawrence.....	<i>Ex officio.</i>
HON. CHARLES F. FOLEY	Lyons.
HON. RODNEY A. ELWARD	Castleton.
HON. GEORGE W. MARBLE	Fort Scott.
MISS RACHEL PUGH	Independence.
HON. A. B. REEVES	Dodge City.
HON. JAMES VANCE HUMPHREY	Junction City.

STATE BOARD OF ADMINISTRATION OF EDUCATIONAL INSTITUTIONS.

Term Beginning July 1, 1913.

MR. ED. T. HACKNEY, <i>President</i> , Wellington..	Term exp.	1917
MR. EDWARD W. HOCH, Marion.....	“ “	1915
MRS. J. M. LEWIS, Kinsley.....	“ “	1917
MR. D. M. BOWEN, <i>Secretary</i> , Pittsburg.		

ADMINISTRATIVE OFFICERS.

THE UNIVERSITY.

FRANK STRONG, PH. D., Chancellor.

Room 101, Fraser Hall.

Hours: 10 A. M. to 12 M. and 2 to 4 P. M.

EDWARD E. BROWN, Secretary and Purchasing Agent.

Room 105, Fraser Hall.

Hours: 8:30 A. M. to 12:30 P. M. and 2 to 5 P. M.

GEORGE O. FOSTER, A. B., Registrar.

Room 111, Fraser Hall.

Hours: 8 A. M. to 12 M. and 2 to 5 P. M.

WILLIAM H. JOHNSON, A. M., High-school Visitor.

Room 113, Fraser Hall.

Hours: Mondays and Saturdays, 9 A. M. to 12 M. and 2 to 4 P. M.

EBEN F. CROCKER, Superintendent of Buildings and Grounds.

Room 201, Repair Shop.

THE SCHOOLS.

FRANK W. BLACKMAR, PH. D., Dean of the Graduate School.

Room 206, Administration Building.

Hours: 8 to 11 A. M.

OLIN TEMPLIN, A. M., Dean of the College of Liberal Arts and Sciences.

Room 102, Fraser Hall.

Hours: 9:15 A. M. to 12:15 P. M.

FRANK O. MARVIN, A. M., Dean of the School of Engineering.

Room 112, Marvin Hall.

Hours: 9 A. M. to 12 M.

JAMES W. GREEN, A. M., Dean of the School of Law.

Room 101, Green Hall.

Hours: 9 to 10 A. M.

CHARLES S. SKILTON, A. B., Dean of the School of Fine Arts.

North College.

Hours: 11 A. M. to 12 M. and 2:30 to 5 P. M.

LUCIUS E. SAYRE, B. S., PH. M., Dean of the School of Pharmacy.

Room 215, Chemistry and Pharmacy Building.

Hours: 10 to 11 A. M.

SAMUEL J. CRUMBINE, M. D., Dean of the School of Medicine.

MERVIN T. SUDLER, PH. D., M. D., Associate Dean of the School of Medicine.

ARTHUR T. WALKER, PH. D., Director of the Summer Session.

Room 202, Fraser Hall.

Hours: Tuesdays and Thursdays, first semester, 9 to 10 A. M.

Mondays, Wednesdays and Fridays, second semester, 9 to 10 A. M.

RICHARD R. PRICE, A. M., Director of University Extension Division.

Room 115, Fraser Hall.

Hours: 8 A. M. to 12 M. and 2 to 5 P. M.

CHARLES H. JOHNSTON, PH. D., Dean of the School of Education.

Room 119, Fraser Hall.

Hours: 10 A. M. to 12 M., first semester.

10 A. M. to 11 A. M., second semester.

LIBRARY AND GYMNASIUM.

CARRIE M. WATSON, A. B., Librarian.

JAMES NAISMITH, A. B., M. D., Director of Gymnasium.

THE MUSEUMS.

FRANK STRONG, PH. D., *ex officio*, Director of the Museums.

LEWIS L. DYCHE,* A. M., M. S., Curator of the Mammals, Birds, and Fishes.

HANDEL T. MARTIN, Assistant Curator of the Vertebrate Paleontological Collections.

SAMUEL J. HUNTER, A. M., Curator of the Entomological Collections.

ERASMUS HAWORTH, PH. D., Curator of the Geological and Mineralogical Collections.

WILLIAM C. STEVENS, M. S., Curator of the Herbarium.

ALEXANDER M. WILCOX, PH. D., Curator of the Classical Museum.

UNIVERSITY GEOLOGICAL SURVEY OF KANSAS.

FRANK STRONG, PH. D., Director, *ex officio*.

ERASMUS HAWORTH, PH. D., State Geologist.

EDGAR H. S. BAILEY, PH. D., Chemist.

ENGINEERING EXPERIMENT STATION.

FRANK STRONG, PH. D., President.

FRANK O. MARVIN, A. M., Director, Civil Engineering.

EDGAR H. S. BAILEY, PH. D., Chemical Engineering.

ERASMUS HAWORTH, PH. D., Mining Engineering.

PERLEY F. WALKER, M. M. E., Mechanical Engineering.

GEORGE C. SHAAD, E. E., Electrical Engineering.

* Now acting as state fish and game warden.

UNIVERSITY COUNCIL.

THE CHANCELLOR OF THE UNIVERSITY, *Chairman.*

WILLIAM CHASE STEVENS, *Secretary.*

Professors and heads of departments of the schools of the University.

THE FACULTIES.

The Faculty of each school is made up of the heads of departments offering work in that school, the professors and associate professors offering courses in it, and the assistant professors and instructors who have been assigned to that Faculty. By a rule of the Board of Regents, only professors and associate professors may be members of more than one Faculty. Teachers of lower rank may, however, give instruction in several schools of the University. In such cases the name of the instructor is printed in the departmental list of each school in which he gives instruction.

Each Faculty is the legal governing body in all matters concerning its own school *exclusively*.

OFFICERS OF INSTRUCTION AND ADMINISTRATION.

The officers of instruction and administration in the University are divided into the following groups:

PROFESSORS.

ASSOCIATE PROFESSORS.

ASSISTANT PROFESSORS.

INSTRUCTORS.

ASSISTANT INSTRUCTORS.

LIBRARIAN AND ASSISTANTS.

EXECUTIVE AND BUSINESS OFFICERS.

PROFESSORS.

FRANK STRONG, A. B., 1884, A. M., 1893, PH. D., 1897, (Yale); LL. D., 1909, (Baker University). Chancellor of the University, and President of the Faculties, 1902.*
(101 F.†) 1345 Louisiana.

WILLIAM HERBERT CARRUTH,‡ A. B., 1880, (University of Kansas); A. M., 1889, PH. D., 1893, (Harvard). Vice President of the Faculties, and Professor of Germanic Languages and Literatures, 1882. 1879.
(303 F.) 1342 Louisiana.

EPHRAIM MILLER, A. B., 1855, A. M., 1858, PH. D., 1895, (Allegheny). Emeritus Professor of Mathematics and Astronomy, 1910; 1874.
558 N. Lake ave., Pasadena, Calif.

JAMES WOODS GREEN, A. B., 1866, A. M., 1886, (Williams). Dean of the School of Law, and Professor of Law, 1878.
(101 G.) 637 Tennessee.

* The date after each title indicates the year of appointment to the present rank; a second date denotes the year of first appointment in the University, when that fact is not indicated by the first date.

† Abbreviations:

A=Administration Building.
B=Blake Hall.
C=Chemistry Building.
D=Dick Building Studios.
F=Fraser Hall.
G=Green Hall.
H=Haworth Hall.
L=Spooner Library.

M=Marvin Hall.
Med=Medical Hall.
Mu=Museum of Natural History.
N=North College.
RG=Robinson Gymnasium.
S=Snow Hall.
Sh=Fowler Shops.
ML=Mechanical Laboratory.
PP=Power Plant.

‡ Resigned.

- FRANK OLIN MARVIN, A. B., 1871, A. M., 1874, (Allegheny).
Dean of the School of Engineering, and Professor of Civil
Engineering, 1882; 1875. (112 M.) 1603 Massachusetts.
- EDGAR HENRY SUMMERFIELD BAILEY, PH. B., 1873, (Yale);
PH. D., 1883, (Illinois Wesleyan). Professor of Chemistry
and Metallurgy, and Director of Chemical Laboratories, 1883.
(214 C.) 1101 Ohio.
- ALEXANDER MARTIN WILCOX, A. B., 1877, PH. D., 1880, (Yale).
Professor of Greek Language and Literature, 1885.
(204 F.) 1605 Vermont.
- LUCIUS ELMER SAYRE, B. S., 1897, (University of Michigan);
PH. G., 1866, PH. M., 1896, (Philadelphia). Dean of the
School of Pharmacy, and Professor of Pharmacy, 1885.
(215 C.) 1323 Ohio.
- LEWIS LINDSAY DYCHE,* (A. B., B. S., 1884, A. M., 1886, M. S.,
1888, (University of Kansas). Professor of Systematic
Zoölogy, 1889; 1883. Pratt, Kan.
- FRANK WILSON BLACKMAR, PH. D., 1889, (Johns Hopkins).
Dean of the Graduate School, and Professor of Sociology and
Economics, 1889. (206 A.) 1115 Ohio.
- CHARLES GRAHAM DUNLAP, A. B., 1883, A. M., 1899, (Ohio Wes-
leyan); LITT. D., 1892, (Princeton). Professor of English
Literature, 1890; 1887. (203 F.) 925 Kentucky.
- CARL ADOLPH PREYER, (Vienna), MUS. D., 1909, (Baker Univer-
sity). Professor of Piano, Counterpoint, Canon, and Fugue,
1892. (N.) 2014 Massachusetts.
- OLIN TEMPLIN, A. B., 1886, A. M., M. S., 1890, (University of
Kansas). Dean of the College of Liberal Arts and Sciences,
and Professor of Philosophy, 1893; 1884. (102 F.) 1025 Missouri.
- EDWIN MORTIMER HOPKINS, A. B., 1888, PH. D., 1894, (Prince-
ton). Professor of Rhetoric and English Language, 1893;
1889. (201 F.) 1201 Tennessee.
- FRANK HEYWOOD HODDER, A. B., PH. M., 1883, (University of
Michigan). Professor of American History and Political
Science, 1893; 1891. (211 A.) 1115 Louisiana.
- ERAMUS HAWORTH, B. S., 1881, M. S., 1884, (University of Kan-
sas); PH. D., 1888, (Johns Hopkins). Professor of Geology,
Mineralogy, and Mining, and Superintendent of the Geological
Survey, 1894; 1892. (104 H.) 1503 Massachusetts.
- ARTHUR TAPPAN WALKER, A. B., 1887, (University of New York
City); A. M., 1892, (Vanderbilt); PH. D., 1898, (University of
Chicago). Director of the Summer Session, and Professor of
Latin Language and Literature, 1897. (202 F.) 1645 Louisiana.

* Now serving as state fish and game warden.

WILLIAM CHASE STEVENS, B. S., 1885, M. S., 1893, (University of Kansas). Professor of Botany, 1899; 1889.
(201 S.) 1121 Louisiana.

ARVIN SOLOMON OLIN, A. B., 1892, (Ottawa University); A. M., 1894, (University of Kansas). Professor of Education, 1899; 1893.
(106 F.) 1144 Louisiana.

WILLIAM ALEXANDER GRIFFITH, (Academy Julien, Paris). Professor of Drawing and Painting, 1899.
(310 A.) 1200 Louisiana.

EUGENIE GALLOO, B. L., 1892, (University of Michigan); Académie de Paris, Brevet, 1881, Sorbonne, 1884, (University of France); A. M., 1895, (University of Kansas). Professor of Romance Languages and Literatures, 1900; 1892.
(304 F.) 1324 Louisiana.

WILLIAM LIVESEY BURDICK, A. B., 1882, A. M., 1884, (Wesleyan); PH. D., 1885, (Grant); LL. B., 1898, (Yale). Professor of Law, 1902; 1898.
(206 G.) 916 Kentucky.

CHARLES SANFORD SKILTON, A. B., 1889, (Yale). Dean of the School of Fine Arts, and Professor of Musical Theory and Organ, 1903.
(N.) 1318 Louisiana.

CHARLES EDWARD HUBACH, (Graduate of the New England Conservatory of Music; Sbriglia, Paris). Professor of Voice, 1903.
(N.) West City Limits.

JOHN ELOF BOODIN,* A. B., 1895, A. M., 1896, (Brown); PH. D., 1899, (Harvard). Professor of Philosophy, 1904.

IDA HENRIETTA HYDE, B. S., 1891, (Cornell); PH. D., 1896, (Heidelberg, Germany). Professor of Physiology, 1905; 1899.
(102 Med.) University Heights.

WILLIAM HAMILTON JOHNSON, A. B., 1885, A. M., 1892, (University of Kansas). High-school Visitor, and Professor of Education, 1905; 1903.
(113 F.) 1201 Oread Ave.

JAMES NAISMITH, A. B., 1887, (McGill University); M. D., 1898, (Gross Medical College); M. P. E., 1910, (Springfield Y. M. C. A. College). Professor of Physical Education, 1906; 1898.
(RG.) 1635 Massachusetts.

MARSHALL ALBERT BARBER,† A. B., 1891, (University of Kansas); A. M., 1894, (Harvard). Professor of Bacteriology and Pathology, and Director of the Clinical Laboratories, 1906; 1895.

SAMUEL JOHN HUNTER, A. B., A. M., 1893, (University of Kansas). Professor of Entomology, 1906; 1896.
(102 S.) 1309 Ohio.

* On leave of absence.

† On leave of absence in government laboratories, Manila, P. I., 1911-'13.

- WILLIAM EDWARD HIGGINS, B. S., 1888, LL. B., 1894, (University of Kansas). Professor of Law, 1906; 1899.
(205 G.) 1238 Ohio.
- PERLEY F. WALKER, B. M. E., 1896, (University of Maine); M. M. E., 1901, (Cornell). Professor of Mechanical Engineering and Director of Fowler Shops, 1906; 1905.
(211 M.) 1301 Ohio.
- MERVIN TUBMAN SUDLER, PH. D., 1899, (Johns Hopkins); M. D., 1901, (College of Physicians and Surgeons, Baltimore). Associate Dean of the School of Medicine, and Professor of Surgery, 1911; 1905.
805 Tennessee.
- ROBERT KENNEDY DUNCAN, A. B., 1892, (Toronto); SC. D., 1912, (University of Pittsburg). Director of Industrial Research, with rank of Professor, 1910; 1906.
- CARL LOTUS BECKER, B. L., 1896, PH. D., 1907, (University of Wisconsin). Professor of European History, 1908; 1902.
(211 A.) 1144 Indiana.
- L. D. HAVENHILL, PH. C., 1893, PH. M., 1894, (University of Michigan); B. S., 1903, (University of Kansas). Professor of Pharmacy, 1908; 1899.
(1 C.) 1539 Vermont.
- FREDERICK EDWARD KESTER, M. E., 1895; (Ohio State University); A. M., 1899, PH. D., 1905, (Cornell). Professor of Physics, 1909.
(204 B.) 1612 Louisiana.
- GEORGE CARL SHAAD, B. S., 1900, E. E., 1905, (Penn. State College). Professor of Electrical Engineering, 1909.
(2 M.) University Heights.
- RICHARD REES PRICE, A. B., (University of Kansas, 1897; Harvard, 1900); A. M., 1901, (Harvard). Director of University Extension, with rank of Professor, 1909.
(115 F.) 1329 Ohio.
- CHARLES HUGHES JOHNSTON, A. B., 1898, (University of North Carolina); A. M., 1903, PH. D., 1905, (Harvard). Professor of Education, and Dean of the School of Education, 1910.
(119 F.) 1240 Mississippi.
- EDNA D. DAY, B. S., 1896; M. S., 1897, (University of Michigan); PH. D., 1908, (University of Chicago). Professor of Home Economics, 1910.
(10 F.) 1345 Tennessee.
- HENRY CLINTON HILL,* A. B., 1888, (Bowdoin); LL. B., 1899, (University of Michigan). Professor of Law, 1910.
- SAMUEL JAY CRUMBINE, M. D., 1889, (Cincinnati). Dean of the School of Medicine.
1303 Tyler, Topeka.
- HAMILTON PERKINS CADY, A. B., 1897, PH. D., 1903, (University of Kansas). Professor of Chemistry, 1911; 1899.
(115 C.) 1535 Kentucky.

* Died April 7, 1913.

- B. J. DALTON, B. C. E., 1890, (University of Kansas). Professor of Railway Engineering and Surveying, 1906.
(118 M.) 1011 Indiana.
- THOMAS HARRIS BOUGHTON, B. S., 1903, M. S., 1904, (University of Chicago); M. D., 1906, (Rush Medical College). Professor of Bacteriology and Pathology, 1911.
(203 S.) 1603 Massachusetts.
- MERLE THORPE, A. B., 1908, (University of Washington). Professor of Journalism, and Head of the Department of Publicity, 1911.
(Med.) 1301½ Tennessee.
- HARRY ALVIN MILLIS, A. B., 1895, A. M., 1896, (Indiana University); PH. D., 1899, (University of Chicago). Professor of Economics, 1912.
(204 A.) 1006 Mississippi.
- JOHN SUNDWALL, B. S., 1903, PH. D., 1906, (University of Chicago); M. D., 1912, (Johns Hopkins). Professor of Anatomy, 1912.
(Mu.) 1622 New Hampshire.
- LINDSEY STEPHEN MILNE, M. B., CH. B., M. R. C. P., M. D., (University of Edinburgh). Professor of Clinical Medicine, 1912.
1007 Linwood, Kansas City, Mo.
- ROBERT BURNS H. BEGG, B. S., 1899, C. E., 1901, (Virginia Polytechnic Institute). Professor of Sanitary and Hydraulic Engineering, 1912.
(202 M.) 1601 Tennessee.
- GRANDVILLE R. JONES, C. E., 1904, (Ohio State University); S. E., 1907, (Massachusetts Institute of Technology). Professor of Sanitary Engineering, 1912.
(209 M.) 1244 Louisiana.
- CHARLES MOREAU HARGER, L. H. D., 1901, (Bethany); LITT. D., (Baker University). Lecturer in Journalism, 1911, 1905.
Abilene, Kan.
- MONTROSE PALLAN MCARDLE. Professor of Architecture, 1910.
- JOSEPH E. SAWTELL, M. D., 1886, (College of Physicians and Surgeons, Baltimore). Professor of Rhinology, and Head of the Department.
Waldheim bldg., Kansas City, Mo.
- DON CARLOS GUFFEY, A. B., 1899, (University of Missouri); M. D., 1905, (University of Pennsylvania). Professor of Obstetrics and Gynecology.
(BH.) 909 Waldheim bldg., Kansas City, Mo.
- FRANKLIN E. MURPHY, 1893, (University of Pennsylvania). Professor of Internal Medicine.
Waldheim bldg., Kansas City, Mo.
- JACOB BLOCK, M. D., 1879, (Medical College of Ohio). Professor of Genito-urinary Surgery.
Argyle bldg., Kansas City, Mo.
- JOHN WALKER PERKINS, A. B., 1882, M. D., 1886, (Harvard). Professor of Surgery (Surgical Diagnosis).
Altman bldg., Kansas City, Mo.

ISADORE JULIUS WOLF, M. D., 1887, (Munich). Professor of Internal Medicine.
Argyle bldg., Kansas City, Mo.

CLARENCE CASE GODDARD, M. D., 1873, (Bellevue Hospital Medical College). Professor of Neurology.
Evergreen Place Sanitarium, Leavenworth.

S. S. GLASSCOCK, M. D., 1887, (Rush Medical College). Professor of Psychiatry.
Rialto bldg., Kansas City, Mo.

GEORGE M. GRAY, M. D., 1879, (Kansas City Medical College). Clinical Professor of Surgery.
Portsmouth bldg., Kansas City, Kan.

HENRY O. HANAWALT, M. D., 1873, (Medical College of Ohio). Professor of Neurology.
Shukert bldg., Kansas City, Mo.

DAVID RITTENHOUSE PORTER, M. D., 1872, (Bellevue Hospital Medical College). Professor Emeritus of Internal Medicine, and Lecturer on Life Insurance, 1909.
Kansas City, Mo.

LYMAN L. UHLS, M. D., 1884, (Rush Medical College). Professor of Psychiatry, 1911.
Osawatomie.

ZACHARIAH NASON, M. D., 1888, (College of Physicians and Surgeons, Baltimore). Clinical Professor of Obstetrics.
1300 Central, Kansas City, Kan.

CHARLES J. LIDIKAY, M. D., 1894, (University of Louisville). Clinical Professor of Ophthalmology, 1908, 1907.
Portsmouth bldg., Kansas City, Kan.

JAMES W. MAY, M. D., 1900, (College of Physicians and Surgeons, Kansas City, Kan.) Clinical Professor of Surgery, 1911.
Husted bldg., Kansas City, Kan.

ASSOCIATE PROFESSORS.

MILES WILSON STERLING, A. B., 1883, A. M., 1893, (University of Kansas). Associate Professor of Greek, 1901; 1883.
(204 F.) 1129 Louisiana.

RAPHAEL DORMAN O'LEARY, A. B., (University of Kansas, 1893; Harvard, 1895). Associate Professor of Rhetoric, 1901; 1896.
(301 F.) 1106 Louisiana.

HANNAH OLIVER, A. B., 1874, A. M., 1888, (University of Kansas). Associate Professor of Latin, 1905; 1890.
(201 F.) 802 Tennessee.

ELMER FRANKLIN ENGEL, A. B., 1892, (University of Kansas); A. M., 1898, (Harvard). Associate Professor of German, 1905; 1892.
(103 M.) 1211 Kentucky.

SELDEN LINCOLN WHITCOMB, A. B., 1887, (Grinnell); A. M., 1893, (Columbia). Associate Professor of English Literature, 1905.
(201 F.) 1244 Tennessee.

- MARTIN EVERETT RICE, B. S., 1891, M. S., 1893, (University of Kansas). Associate Professor of Physics and Electrical Engineering, 1906; 1892. (204 B.) 1223 Vermont.
- JOHN NICHOLAS VAN DER VRIES, A. B., 1896, A. M., 1899, (Hope); PH. D., 1901, (Clark). Associate Professor of Mathematics, 1906; 1901. (108 M.) 1644 New Hampshire.
- HERBERT ALLAN RICE, C. E., 1897, (Ohio State University). Associate Professor of Civil Engineering, 1905. (202 M.) 1304 Ohio.
- CLINTON MASON YOUNG, B. S. in Mining, 1904, E. M., 1909, (Case). Associate Professor of Mining Engineering, 1906. (H.) 1227 Ohio.
- RAYMOND ALFRED SCHWEGLER, A. B., 1899, (Brown); A. M., 1907, (Ottawa University). Associate Professor of Education, 1907. (118 F.) 1601 Rhode Island.
- FREDERICK HORATIO BILLINGS, A. B., 1896, (Leland Stanford); A. M., 1897, (Harvard); PH. D., 1901, (Munich). Associate Professor of Botany and Bacteriology, 1907. (201 S.) 1209 Tennessee.
- DAVID LESLIE PATTERSON, B. S., 1895, (Pennsylvania State College). Associate Professor of European History, 1908. (209 A.) 1135 Ohio.
- HENRY WILBUR HUMBLE, LL. B., 1904, (University of Cincinnati); A. M., 1908, (Cornell). Associate Professor of Law, 1908. (202 G.) University Heights.
- LOUIS EUGENE SISSON, A. B., 1904, (Leland Stanford); A. M., 1909, (Harvard). Associate Professor of Rhetoric, 1905; 1904. (201 F.) 1234 Louisiana.
- CLARENCE ADDISON DYKSTRA, A. B., 1903, (University of Iowa). Associate Professor of History, 1909. (209 A.) 1536 Tennessee.
- ARTHUR JEROME BOYNTON, A. B., 1901, (Harvard); A. M., 1902, (Columbia). Associate Professor of Economics, 1910; 1903. (204 A.) 1135 Ohio.
- CHARLES HAMILTON ASHTON, A. B., 1887, (Union); A. M., 1893, (Harvard); PH. D., 1909, (Munich). Associate Professor of Mathematics, 1910; 1903. (108 M.) 1202 Ohio.
- FRANCIS WILLIAM BUSHONG, A. B., 1885, A. M., 1888, (Franklin and Marshall); SC. D., 1900, (College of Emporia). Fels Fellow in Industrial Research, with the rank of Associate Professor of Chemistry, 1910; 1905. (11 C.) 1609 Vermont.
- ALBERTA LINTON CORBIN, A. B., 1893, (University of Kansas); PH. D., 1902, (Yale). Associate Professor of German, 1911; 1901. (303 F.) 1108 Ohio.

- GEORGE JUSSEN HOOD, B. S., 1902, (University of Kansas). Associate Professor of Mechanical Drawing, 1911; 1902.
(302 M.) University Heights.
- WILLIAM OLIVER HAMILTON, A. B., 1898, (William Jewell College). Associate Professor of Physical Education, 1911; 1909.
(RG.) 1134 Mississippi.
- FRANK BURNETT DAINS, PH. B., 1890, M. S., 1891, (Wesleyan University); PH. D., 1898, (University of Chicago). Associate Professor of Chemistry, 1911.
(102 C.) 1224 Louisiana.
- MARGARET LEE JOHNSON, M. D., 1908, (University of Colorado). Associate Professor of Physical Education, 1911.
(RG.) 1228 Ohio.
- WILLIAM ASBURY WHITAKER, JR., PH. B., 1904, (University of North Carolina); M. A., 1905, (Columbia). Associate Professor of Metallurgy, 1911.
(310 C.) 1201 Tennessee.
- EDWARD RAY WEIDLEIN, A. B., 1909, A. M., 1910, (University of Kansas). Robert Kennedy Duncan Fellow No. 1 in Industrial Research, with rank of Associate Professor, 1912.
1805 Massachusetts.
- WILLIAM KIRK TRIMBLE, M. D., 1900, (Kansas City Medical College). Associate Professor of Clinical Pathology, 1908; 1905.
(Lab.) Rosedale, Kan.
- HARRY LESLIE CHAMBERS, M. S., 1896, (Lane University); M. D., 1895, (Kansas City Medical College). Adjunct Professor of Hygiene, and University Physician, 1911.
(RG.) 1415 Massachusetts.
- ARTHUR E. HERTZLER, M. D., 1894, (Northwestern); PH. D., 1902, (Illinois Wesleyan). Associate Professor of Surgery.
(BH.) Rosedale, Kan.
- ANDREW L. SKOOG, M. D., 1902, (Northwestern). Associate Professor of Neurology, 1911.
Rialto bldg., Kansas City, Mo.
- WALTER S. SUTTON, A. B., 1900, A. M., 1901, (University of Kansas); M. D., 1907, (College of Physicians and Surgeons). Associate Professor of Surgery, 1911; 1909.
(BH.) 650 Everett Ave., Kansas City, Kan.
- WILLIAM L. MCBRIDE, M. D., 1901, (Rush Medical College). Associate Professor of Dermatology.
Rialto bldg., Kansas City, Mo.
- RICHARD L. SUTTON, M. D., 1901, (University Medical College). Associate Professor of Dermatology, 1911.
610 Commerce bldg., Kansas City, Mo.
- JOHN N. SCOTT, PH. G., 1887, (University of Kansas); M. D., 1896, (University Medical College, Kansas City). Associate Professor of Therapeutics.
Commerce bldg., Kansas City, Mo.

SAMUEL CHARLES EMLEY,* A. B., 1899, (University of Kansas); M. D., 1902, (Rush Medical College). Associate Professor of Rhinology, 1911; 1905.

WILLIAM F. KUHN, A. M., 1878, (Wittenberg); M. D., 1885 (Jefferson Medical College). Adjunct Professor and Lecturer. 125 Rialto bldg., Kansas City, Mo.

SIMON B. LANGWORTHY, M. D., 1887, (Kansas City Medical College). Adjunct Professor of Gynecology. Leavenworth, Kan.

ASSISTANT PROFESSORS.

FRANK EMERSON WARD, (Northern Indiana Normal School). Superintendent of Fowler Shops and Shop Instruction, 1899; 1889. (Sh.) 1236 Oread Ave.

CHARLES MORGAN STERLING, A. B., 1897, (University of Kansas). Assistant Professor of Pharmacology, 1901. (209 C.) 920 Indiana.

FREDERICK NEWTON RAYMOND, A. B., 1896, (University of Kansas); A. M., 1897, (Columbia). Assistant Professor of Rhetoric, 1901. (107 M.) 808 Illinois.

MARGARET LYNN, B. S., 1889, (Tarkio); A. M., 1900, (University of Nebraska). Assistant Professor of English Literature, 1901. (301 F.) 1244 Louisiana.

EDWIN FISKE STIMPSON, B. S., 1890, (University of Kansas). Assistant Professor of Physics, 1905; 1901. (202 B.) 926 Indiana.

WILLIAM JACOB BAUMGARTNER, A. B., 1900, A. M., 1901, (University of Kansas). Assistant Professor of Zoölogy and Histology, 1905; 1904. (3 S.) 1209 Ohio.

HENRY OTTO KRUSE, A. B., 1894, A. M., 1903, (University of Kansas). Assistant Professor of German, 1905; 1904. (303 F.) 1538 Kentucky.

ELISE NUEN SCHWANDER, A. B., 1898, (University of Kansas). Assistant Professor of Romance Languages, 1905. (304 F.) 1324 Louisiana.

CHARLES HENRY GRAY, B. L., 1895, M. L., 1896, (University of Michigan); Ph. D., 1904, (University of Chicago). Assistant Professor of English Literature, 1905. (301 F.) 1000 Ohio.

HERBERT WILLIAM EMERSON, Ph. C., 1901, B. S., 1902, (University of Michigan). Assistant Professor of Pharmacy, 1906; 1903. (105 C.) University Heights.

* Died, October 15, 1912.

- CHARLES COCHRAN, (University of Colorado). Assistant Professor of Mechanical Drawing, 1906.
(302 M.) 1336 Kentucky.
- LEON NELSON FLINT, A. B., 1897, (University of Kansas). Assistant Professor of Journalism, 1906.
(112 F.) 629 Alabama.
- FRANK EVERETT JONES, (Armour Institute). Assistant Professor of Carpentry and Pattern Making, 1903.
(Sh.) 1324 New Hampshire.
- CLARENCE CORY CRAWFORD, A. B., 1903, A. M., 1904, (University of Kansas); PH. D., 1906, (University of Wisconsin). Assistant Professor of European History, 1907.
(209 A.) 1530 Kentucky.
- EARL WALTER MURRAY, A. B., 1904, (University of Kansas). Assistant Professor of Latin, 1907.
(202 F.) 1603 Louisiana.
- HENRY LOUIS JACKSON,* B. S., 1905, (Massachusetts Institute of Technology); M. S., (Hamilton). Assistant Professor of Chemistry, in Charge of Foods, 1907.
- JAMES EDWARD TODD, A. B., 1867, A. M., 1870, (Oberlin). Assistant Professor of Geology and Mineralogy, 1907.
(1 H.) 905 Missouri.
- HARRIET GREISSINGER, MUS. B., 1895, (University of Kansas). Assistant Professor of Piano, 1907; 1902.
(N.) 1232 Louisiana.
- JAMES ANDREW CAMPBELL, A. B., 1901, A. M., 1906, (University of Michigan). Assistant Professor of German, 1907; 1906.
(303 F.) 1704 Tennessee.
- ALFRED HIGGINS SLUSS, B. S., in Mech. Eng., 1901, (University of Illinois). Assistant Professor of Mechanical Engineering, 1908.
(305 M.) 1133 Kentucky.
- WILLIAM SAVAGE JOHNSON, A. M., 1900, PH. D., 1905, (Yale). Assistant Professor of English Literature, 1908.
(301 F.) 1135 Ohio.
- WILLIAM PHILIP WARD, A. B., 1906, (Western Reserve University). Assistant Professor of Romance Languages, 1908.
(304 F.) 819 Kentucky.
- MAUDE BEATRICE COOKE, (University of Kansas); (New England Conservatory of Music, Berlin). Assistant Professor of Piano, 1907; 1904.
(N.) 917 Kentucky.
- HARRY GARDNER, B. S. in General Engineering, 1905, (University of Wisconsin). Assistant Professor of Sanitary Engineering, 1909.
(209 M.) 1038 Missouri.

* Resigned, February 15, 1913.

- ROY LEE MOODIE, A. B., 1905, (University of Kansas); PH. D., 1908, (University of Chicago). Assistant Professor of Zoölogy, 1909; 1908. (206 S.) 1845 Learnard Ave.
- DAVID CAMP ROGERS, A. B., 1899, (Princeton); A. M., 1902, PH. D., 1903, (Harvard). Assistant Professor of Psychology, 1909. (5 A.) 1234 Mississippi.
- EDWARD MAURICE BRIGGS,* A. B., 1904, (University of Nebraska); A. M., 1908, (University of Kansas). Assistant Professor of German, 1910; 1906. (103 M.) 1234 Oread Ave.
- ALBERT MOREY STURTEVANT, A. B., 1899, A. M., 1901, PH. D., 1905, (Harvard). Assistant Professor of German, 1910; 1908. (303 F.) 924 Louisiana.
- GEORGE NATHANIEL WATSON, A. B., 1904, B. S., PH. C., 1908, (University of Michigan). Assistant Professor of Pharmacy, 1910; 1909. (8 C.) 1001 Maine.
- EDWARD TILLOTSON, PH. D., 1909, (Yale). Holophane Fellow in Industrial Research, with rank of Assistant Professor, 1909. (14 C.) 1541 Tennessee.
- L. V. REDMAN, A. M., (Toronto). Julius Karpen Fellow in Industrial Research, with rank of Assistant Professor, 1910. (15 C.) 1803 Massachusetts.
- WILLIAM HENRY TWENHOFEL, A. B., 1904, (Lebanon); A. B., 1908, A. M., 1910, PH. D., 1912, (Yale). Assistant Professor of Geology, 1910. (103 H.) 1515 Vermont.
- ARTHUR LESLIE OWEN, A. B., 1906, (University of Vermont); A. M., 1908, (University of Illinois); Assistant Professor of Romance Languages, 1910. (304 F.) 1801 New Hampshire.
- HOMER WALKER JOSSELYN, A. B., 1905, A. M., 1910, (University of Michigan). Assistant Professor of Education, 1910. (118 F.) 1625 Louisiana.
- ULYSSES GRANT MITCHELL, A. B., 1906, A. M., 1907, (University of Kansas); PH. D., 1910, (Princeton). Assistant Professor of Mathematics, 1910. (111 A.) 1313 Massachusetts.
- MARION BALLANTYNE WHITE, PH. B., 1893, (University of Michigan); A. M., 1906, (University of Wisconsin); PH. D., 1910, (University of Chicago). Assistant Professor of Mathematics, 1910. (111 A.) 1304 Ohio.
- LULU GARDNER, A. B., 1905, (University of Kansas). Assistant Professor of Rhetoric, 1910. (201 F.) 407 W. Hancock.
- HERMAN CAMP ALLEN, A. B., 1904, (McPherson College); A. M., 1905, (University of Kansas). Assistant Professor of Chemistry, 1910. (204 C.) 1011 Alabama.

* On leave of absence, 1912-'13.

WILLIAM WATSON DAVIS, B. S., 1903, M. S., 1904, (Alabama Polytechnic); A. M., 1905, PH. D., 1913, (Columbia). Assistant Professor of American History and Political Science, 1910.
(209 A.) 1135 Ohio.

GERHARD ADAM GESELL, A. B., 1908, (University of Wisconsin). Assistant Professor of Public Speaking, 1910.
(108 F.) 1332 Louisiana.

VICTOR EMANUEL HELLEBERG, A. B., 1883, (Yale); LL. B., 1885, (Cincinnati). Assistant Professor of Sociology, 1910.
(204 A.) 1732 Louisiana.

CALVERT JOHNSON WINTER, PH. B., 1905, (Hiram College). Assistant Professor of Romance Languages, 1911; 1909.
(304 F.) 1230 Oread Ave.

CLARENCE ANTHONY JOHNSON, B. S., 1906, (University of Nebraska). Assistant Professor of Electrical Engineering, 1911; 1908.
(2 M.) 1017 Alabama.

CLIFFORD CAUDY YOUNG, A. B., 1910, (University of Kansas). Assistant Professor of Chemistry, 1911; 1910.
(302 C.) 1015 Maine.

DE WITT CLINTON CROISSANT, A. B., 1899, PH. D., 1911, (Princeton). Assistant Professor of English, 1911.
(201 F.) 1611 Tennessee.

ARTHUR MITCHELL, A. B., 1894, (Yale); PH. D., 1910, (Harvard). Assistant Professor of Philosophy, 1911.
(104 A.) 408 W. Pinckney.

OSCAR EDWARD HARDER, A. B., 1910, A. M., 1911, (University of Oklahoma). Food Analyst, with rank of Assistant Professor, 1911.
(308 C.) 1014 Mississippi.

FREDERICK A. G. COWPER, A. B., 1906, A. M., 1911, (Trinity). Assistant Professor of Romance Languages, 1911.
(304 F.) 408 W. Lee.

HERBERT E. JORDAN, A. B., 1900, A. M., 1901, (McMasters University, Toronto); PH. D., 1904, (University of Chicago). Assistant Professor of Mathematics, 1911.
(108 M.) 1600 Kentucky.

GEORGE ELLSWORTH PUTNAM, A. B., 1907, (University of Kansas); A. M., 1908, (Yale); B. LIT., 1911, (Oxon). Assistant Professor of Economics, 1911.
(204 A.) 1410 New York.

DAVID W. STRADLING, B. S., 1902, C. E., 1911, (Purdue). Assistant Professor of Civil Engineering, 1911.
(306 M.) 1217 Tennessee.

WILLIAM REES BREBNER ROBERTSON, A. B., 1906, A. M., 1907, (University of Kansas). Assistant Professor of Zoölogy, 1912.
(207 S.) 1234 Mississippi.

- CHARLES ALBERT SHULL, B. S., 1905, (University of Chicago).
Assistant Professor of Botany, 1912.
(302 S.) 1724 Mississippi.
- ARTHUR ST. LEGER MOSSE. Assistant Professor of Physical Education, 1912.
(201 R.) 1702 Massachusetts.
- GEORGE WEATHERWORTH STRATTON, A. B., 1907, (University of Colorado); A. M., 1909, PH. D., 1912, (Ohio State University).
Assistant Professor of Chemistry, 1912.
(214 C.) 940 Tennessee.
- AUGUSTUS WILLIAM TRETTEIN, B. L., 1899, (University of Wisconsin); PH. D., 1904, (Clark University). Assistant Professor of Education and Director of Oread Training School, 1911.
(Myers Hall.) 938 Louisiana.
- EDMUND PENDLETON RANDOLPH DUVAL, B. S., 1901, (University of Texas); A. M., 1904, (Harvard). Assistant Professor of Mathematics, 1912.
(108 M.) 1609 Tennessee.
- F. H. SIBLEY, B. S., 1898, (Brown University); M. E., 1904, (Case School). Assistant Professor of Mechanical Engineering, 1912.
(305 M.) 1607 Tennessee.
- FELIX P. CHILLINGWORTH, M. D., —, (Yale). Assistant Professor of Physiology, 1912.
(304 Med.) 1146 Tennessee.
- ARCHIE JAMES WEITH, B. S., 1908, (University of Kansas).
Karpen Fellow, with rank of Assistant Professor, 1912.
(13 C.) 1308 Ohio.
- FRANK PETERSON BROCK, B. S., 1907, (University of Kansas).
Karpen Fellow, with rank of Assistant Professor, 1912.
(13 C.) 1308 Ohio.
- JOHN G. HAYDEN, B. S., 1902, (University of Chicago); M. D., 1904, (Rush Medical College). Assistant Professor of Surgery, 1909.
Rialto bldg., Kansas City, Mo.
- RUSSELL A. ROBERTS, A. B., 1881, A. M., 1886, (Marysville ° [Tenn.] College); M. D., 1887, (Medical College of Indiana).
Assistant Professor of Rectal Surgery, 1911.
Husted bldg., Kansas City, Kan.
- CLAY E. COBURN, M. D. Lecturer on State Medicine.
Kansas City, Kan.
- EDWARD PARK HALL, M. D., 1897, (Ensworth Medical College and Hospital). Assistant Professor of Rhinology, 1911.
Rialto bldg., Kansas City, Mo.

INSTRUCTORS.

- EUGENE SMITH, M. D., 1876, (Rush). Demonstrator in Anatomy, 1903. (Mu.) 718 Kentucky.
- LALIA VIOLA WALLING, A. B., 1905, A. M., 1907, (University of Kansas). Instructor in Physiology, 1908; 1905. (204 Med.) 945 Connecticut.
- ESTHER WILSON,* A. B., 1901, A. M., 1902, (University of Kansas). Instructor in German, 1908. (303 F.) 1135 Ohio.
- NADINE NOWLIN, A. B., A. M., 1903, (University of Kansas). Instructor in Zoölogy, 1909; 1906. (206 S.) 1144 Indiana.
- MAY GARDNER, A. B., 1897, (University of Kansas). Instructor in Romance Languages, 1909. (103 M.) 1200 Mississippi.
- WORT S. MORSE, (Brussels Conservatory); B. S., 1898, (Central Wesleyan College). Instructor in Violin, 1909. (N.) 3925 Walnut, Kansas City, Mo.
- CHARLES BURTON ROOT, A. B., 1912, (University of Kansas). Instructor in Physical Education, 1909. (RG.) 940 Maine.
- ALICE WINSTON,* A. B., 1898, A. M., 1903, (University of Chicago). Instructor in Rhetoric, 1909. (201 F.) 1620 Massachusetts.
- MARIA LEVERING BENSON, A. B., 1900, (Newcomb). Instructor in Design and Ceramics, 1909. (310 A.) 1126 Louisiana.
- ANA JULE ENKE, PH. B., 1905, (University of Chicago). Instructor in Spanish, 1909. (304 F.) 1106 Ohio.
- ROSE RUTH MORGAN, A. B., 1894, A. M., 1895, (University of Kansas). Instructor in English, 1910. (201 F.) 1101 Missouri.
- THEODORE TOWNSEND SMITH, A. B., 1907, A. M., 1908, (Harvard). Instructor in Physics, 1910. (5 B.) 1234 Mississippi.
- AMIDA STANTON, A. B., 1904, (University of Kansas). Instructor in Romance Languages, 1910. (308 F.) 2045 Learned Ave.
- ALLEN ANDERS SEIPT, A. B., 1900, A. M., 1903, PH. D., 1906, (University of Pennsylvania). Instructor in German, 1910. (303 F.) 718 W. Elliott.
- FLOYD CARLTON DOCKERAY, A. B., 1907, A. M., 1909, (University of Michigan). Instructor in Psychology, 1910. (5 A.) 1825 Barker Ave.
- HELEN MAUD CLARKE, A. B., 1903, A. M., 1907, (University of Kansas); PH. D., 1910, (Cornell). Instructor in Correspondence Study, 1910. (115 F.) 721 Illinois.

* On leave of absence, 1912-'13.

- GRACE MIRIAM CHARLES, A. B., 1900, (Oberlin); A. M., 1905, PH. D., 1910, (University of Chicago). Instructor in Botany, 1911. (201 S.) 1301 Ohio.
- HELEN GAILE JONES, PH. B., 1900, (De Pauw). Instructor in German, 1911; 1910. (311 F.) 1108 Tennessee.
- CLARA FRANCES MCINTYRE, A. B., 1900, (Radcliffe); A. M., 1911, (Columbia). Instructor in Rhetoric, 1911. (201 F.) 1236 Oread.
- EDWARD LAWRENCE GRIFFIN, A. B., 1911, (University of Kansas). Instructor in Chemistry, 1911. (106 C.) 1023 Kentucky.
- AGNES ANNE ANDERSON, A. B., 1909, (Baker University); A. M., 1911, (University of Kansas). Assistant in Food Laboratory, 1911. (308 C.) 1241 Louisiana.
- RALPH HALL SPOTTS, A. B., 1910, (University of Kansas). Organizer, University Extension, 1911. (115 F.) 2001 Louisiana.
- IRVIN WESLEY HUMPHREY, A. B., 1910, (University of Kansas). Fels Fellow in Industrial Research, with rank of Instructor, 1911. (16 C.) 1014 Mississippi.
- WILL ELBERT VAWTER, B. S., 1911, (University of Kansas). Armstrong Fellow in Industrial Research, with rank of Instructor, 1911. (17 C.) 1014 Mississippi.
- HERBERT B. HUNGERFORD, A. B., 1911, (University of Kansas). Instructor in Entomology, 1911. (102 S.) 1037 Kentucky.
- JOHN JEFFERSON WHEELER, A. B., 1906, (Indiana University). Instructor in Mathematics, 1911. (108 M.) 937 Alabama.
- OSCAR WILLIAM MELIN, B. S. of C. E., 1910, (University of Wisconsin). Instructor in Engineering, 1911. (306 M.) 941 Kentucky.
- HAZEL HOPE MACGREGOR, A. B., 1906, (Yankton College); A. M., 1909, (University of Illinois). Instructor in Mathematics, 1911. (111 A.) 1345 Tennessee.
- HUBERT WILTFONG, Instructor in Forging, 1911. (Sh.) 1302 Tennessee.
- CHARLES A. HASKINS, B. S., 1910, (University of Kansas). Instructor in Civil Engineering, 1911. (209 M.) 1738 Mississippi.
- NOBLE PIERCE SHERWOOD, B. S., 1905, A. M., 1911, (University of Kansas). Instructor in Botany and Bacteriology, 1911; 1910. (S.) 1709 Tennessee.
- NELLIE MAY STEVENSON, A. B., 1907, (University of Kansas). Instructor in Correspondence Study, 1911. (115 F.) 804 Kentucky.

- JACOB OSCAR JONES, B. S., 1911, (University of Kansas). Instructor in Civil Engineering, 1911. (8 M.) 1400 Ohio.
- WORTH HUFF RODEBUSH, A. B., 1912, (University of Kansas). Instructor in Chemistry, 1912. (115 C.) 1014 Mississippi.
- HOMER OTIS LICHTENWALTER, B. S., 1911, (McPherson). Instructor in Chemistry, 1912. (115 C.) 1014 Mississippi.
- REYNOLD KENNETH YOUNG, A. B., 1909, (Toronto); PH. D., 1912, (University of California). Instructor in Physics and Astronomy, 1912. (104 B.) 937 Missouri.
- ELIZABETH NOWELL, A. B., 1909, B. S. in Home Economics, 1910, (University of Missouri). Instructor in Home Economics, 1912. (1 F.) 1339 Tennessee.
- HEARTY EARL BROWN, A. B., 1909, A. M., 1910, (University of Michigan). Instructor in Rhetoric, 1912. (20 F.) 1121 Ohio.
- ADOLPHINE B. ERNST, A. B., 1907, PH. D., 1912, (University of Wisconsin). Instructor in German, 1912. (303 F.) 940 Indiana.
- MARGARET SEYMOUR BECKWITH, (New Haven Normal School of Gymnastics). Instructor in Physical Education, 1912. (108 R.) 1225 Oread.
- LEON B. MCCARTY, A. B., 1910, A. M., 1912, (Ohio State University). Instructor in Rhetoric, 1912. (107 M.) 1201 Tennessee.
- MARY EDITH PINNEY, A. B., 1908, A. M., 1910, (University of Kansas). Instructor in Zoölogy, 1912. 1209 Ohio.
- MARJORIE BARSTOW, A. B., 1912, (Cornell University). Instructor in Rhetoric, 1912. (201 F.) 407 W. Hancock.
- EMMA PALMER, A. B., 1905, A. M., 1909, (University of Kansas). Instructor in German, 1912. 726 Ohio.
- SARAH GRANT LAIRD, A. B., 1904, (Oberlin); A. M., 1912, (Columbia). Instructor in Rhetoric, 1912. (201 F.) 325 W. Warren.
- LEONARD FRANK, LL. B., 1912, (University of Minnesota). Instructor in Physical Education, 1912. (201 R.) 1011 Indiana.
- JOHN D. GARVER, B. S., 1910, (University of Kansas). Instructor in Mechanical Engineering, 1912. (305 M.) 927 Louisiana.
- HOWARD E. CURL, A. B., 1911, (University of Kansas). Instructor in Physiology, 1912. (204 Med.) 1221 Pennsylvania.
- MYRTLE GREENFIELD, A. B., 1912, A. M., 1912, (University of Kansas). Laboratory Assistant in Bacteriology, 1912. (201 S.) 1241 Louisiana.

- FREDERICK KELLERMAN, (Gottingen, Berlin, Marburg). Instructor in German, 1912. (303 F.) 1121 Kentucky.
- SAUL H. LEWIS, A. B., 1912, (University of Washington). Instructor in Journalism, 1912. (Med.) 1230 Oread.
- EDMUND OLIVER RHODES, B. S., 1912, (University of Kansas). B. F. Thomas Industrial Fellow, with rank of Instructor, 1912. (22 C.) 1803 Massachusetts.
- ORVILLE A. BEATH, A. B., 1908, A. M., 1912, (University of Wisconsin). Instructor in Chemistry, 1912. (214 C.) 1300 Rhode Island.
- OLIVIA OLSSON, (Kansas Wesleyan, Northwestern University). Instructor in Voice, 1912. (7 NC.) 1236 Oread.
- R. PHILLIPS ROSE, B. S., 1912, (Ohio State University). Curtis & Jones Fellow in Industrial Research, with the rank of Instructor, 1912. (14 C.) 1008 Tennessee.
- BENJAMIN J. CLAWSON, B. S., 1909, (Central University), A. M., 1912, (University of Kansas). Instructor in Bacteriology, 1912.
- GILBERT A. BRAGG, B. S., 1912, (University of Kansas). Robert Kennedy Duncan Fellow 2 in Industrial Research, with rank of Instructor. (17 C.) 1014 Mississippi.
- JOSEPH COLBERT McCANLES, B. S., 1907, (Kansas Christian College); LL. B., 1909, (University of Kansas). Instructor in Band Instruments, 1910. 1405 Rhode Island.
- MAUD MILLER, MUS. B., 1898, (University of Kansas). Instructor in Piano, 1908; 1904. (N.) 1232 Louisiana.
- ANNA LOUISE SWEENEY, MUS. B., 1906, (University of Kansas). Instructor in Piano, 1909. (D.) 711 Rhode Island.
- CLARENCE B. FRANCISCO, M. D., 1907, (University of Kansas). Instructor in Orthopedic Surgery. Rialto bldg., Kansas City, Mo.
- PETER THOMAS BOHAN, M. D., 1900, (Rush Medical College). Instructor in Internal Medicine. Rialto bldg., Kansas City, Mo.
- CLIFFORD C. NESSELRODE, M. D., 1906, (University of Kansas). Instructor in Surgical Anatomy. Portsmouth bldg., Kansas City, Kan.
- LOGAN CLENDENING, M. D., 1907, (University of Kansas). Instructor in Medicine, 1911. Rialto bldg., Kansas City, Mo.
- ROBERT DOUGLAS IRLAND, M. D., 1909, (University of Kansas). Instructor in Obstetrics, 1911. Rialto bldg., Kansas City, Mo.

ASSISTANT INSTRUCTORS.

- LARRY M. PEACE, A. B., 1901, A. M., 1906, (University of Kansas). Preparator and Demonstrator in the Botanical Laboratory, 1902. (201 S.) 512 W. Warren.
- HANDEL T. MARTIN. Assistant Curator of Paleontology, 1907; 1899. (Mu.) 745 Arkansas.
- CHARLES D. BUNKER. Assistant Curator of Mammals, Birds and Fishes. (Mu.) 1725 Vermont.
- FRANCIS XAVIER WILLIAMS, A. B., 1908, (Leland Stanford). Assistant Curator in Entomology, 1910. (Mu. 3d Floor.) 1333 Kentucky.
- EPHRAIM EDGAR LANDRUM. Assistant Instructor in Woodworking, 1909. (Sh.) 931 Maine.
- ARTHUR EARL STEVENSON, PH. C., 1909, (University of Kansas). Assistant in Drug Analysis, 1909. (2 C.) 1539 Vermont.
- FREDERICK WILLIAM BRUCKMILLER,* A. B., 1912, (University of Kansas). Assistant in Water Analysis, 1910.
- CARL FALSTER HANSON, B. S., 1912, (University of Kansas). Assistant in Electrical Engineering, 1911. 1317 Kentucky.
- KATE SEARS. Assistant in Botany, 1911. (302 S.) 1330 W. Warren.
- GEORGE SAMUEL SNODDY, A. B., 1912, B. S. in Ed., 1912, (University of Kansas). Assistant Instructor in Education, 1912. (119 F.) 1541 Tennessee.
- HARRISON SIMPSON NEAL. Assistant Instructor in Journalism and Superintendent of Printing Plant, 1912. (Med.) 947 Louisiana.
- ANSEL HARTLEY STUBBS, (University of Kansas). Assistant Instructor in German, 1912. (303 F.) 746 Ohio.
- TRUMAN MILO GODFREY, (University of Kansas). Assistant in Water Analysis, 1912. (302 C.) 1014 Mississippi.
- OTTO MALLEIS, A. B., 1912, (University of Kansas). Assistant in Water Analysis, 1912. (302 C.) 1500 New Hampshire.
- JOHN TENNYSON MYERS, A. B., (Washburn College), M. S., 1912, (University of Kansas). Laboratory Assistant in Chemistry, 1912. (102 C.) 1014 Mississippi.

* On leave of absence, 1912-'13.

LIBRARIAN AND ASSISTANTS.

- CARRIE M. WATSON, A. B., 1877, (University of Kansas). Librarian, 1887. (L.) 1310 Louisiana.
- EDITH M. CLARKE,* A. B., 1895, (University of Kansas). Cataloguer, 1904.
- CLARA SCIOTO GILLHAM, A. B., 1884, (University of Kansas). Loan Desk Assistant, 1894. (L.) 1345 Tennessee.
- DORA RENN BRYANT, (University of Kansas). Reference Assistant, 1899. (L.) 1310 Louisiana.
- MARY MAUD SMELSER. Accession Assistant, 1904. (L.) 1147 Ohio.
- MARY AGNES COLLINS, A. B., 1904, (University of Kansas). Reference Assistant, 1907. (L.) 1045 Vermont.
- MABEL THORNTON. Reference Assistant, 1912. 941 Indiana.
- MABEL G. ULRICH, A. B., 1912, (University of Kansas). Reference Assistant, 1912. 1308 Kentucky.
- ANNA DYKE LEARNARD, A. B., (University of Vermont). School of Engineering Assistant, 1912. 1411 Massachusetts.
- ETHEL MORROW. School of Law Assistant, 1911. (G.) 1416 Kentucky.
- GLENDALE GRIFFITHS, A. B., 1912, (University of Kansas). Biology Assistant, 1912. (205 S.) 1229 Ohio.
- SARAH EVELYN STANTON, A. B., 1902, (University of Kansas). School of Medicine Assistant, 1911. Rosedale, Kan.
- ALICE BLAIR, A. B., 1911, (University of Kansas). Philosophy Assistant, 1911. (A.) 1344 Massachusetts.

EXECUTIVE AND BUSINESS OFFICERS.

- EDWARD E. BROWN. Secretary and Purchasing Agent, 1907; 1894. (105, 109 F.) University Heights.
- GEORGE O. FOSTER, A. B., 1901, (University of Kansas). Registrar of the University, 1899; 1891. (109, 111 F.) 1022 Alabama.
- EBEN F. CROCKER. Superintendent of Buildings and Grounds, 1902. (201 Repair Shop.) University Heights.
- EARL B. CRONMEYER. Chief Clerk, 1911, 1906. (109 F.) 833 Missouri.

* Resigned.

MINNIE STELLA MOODIE. Secretary to the Chancellor, 1902.
(103 F.) Station "A," Lawrence.

JESSIE McDOWELL MACHIR. Assistant Registrar, 1910.
(111 F.) 940 Tennessee.

ELEANOR MAUDE KIBBEY, A. B., 1895, (William Woods College).
Assistant Registrar, School of Medicine, 1905. Rosedale, Kan.

PART II.
The University.

(27)

THE UNIVERSITY.

ORGANIZATION.

The work of the University is comprehended in the schools and departments mentioned below. Everything pertaining to the University organization is under the control of the Board of Regents. Each school and department is also under the control of the Chancellor and a separate Faculty of Instruction.

DEPARTMENTS OF INSTRUCTION.

- I.—The Graduate School.
 - II.—The College of Liberal Arts and Sciences.
 - III.—The School of Engineering.
 - 1.—The Civil Engineering Course.
 - 2.—The Electrical Engineering Course.
 - 3.—The Mechanical Engineering Course.
 - 4.—The Mining Engineering Course.
 - 5.—The Chemical Engineering Course.
 - 6.—The Municipal and Sanitary Engineering Course.
 - IV.—The School of Fine Arts.
 - 1.—The Course in Piano Playing.
 - 2.—The Course in Organ Playing.
 - 3.—The Course in Violin Playing.
 - 4.—The Course in Violoncello Playing.
 - 5.—The Course in Voice Culture.
 - 6.—The Course in Drawing and Painting.
 - 7.—The Course in Expression.
 - V.—The School of Law.
 - VI.—The School of Pharmacy.
 - 1.—The Short Course in Pharmacy.
 - 2.—The Three-year Course in Pharmacy.
 - 3.—The Collegiate Course in Pharmacy.
 - VII.—The School of Medicine.
 - VIII.—The Summer Session.
 - IX.—The School of Education.
 - X.—The University Extension Division.
- Institutions Connected with the University and under its Control.*
- XI.—The Library.
 - XII.—The Gymnasium.
 - XIII.—The Museums.
 - XIV.—The University Geological Survey.
 - XV.—The Engineering Experiment Station.

SCHOOLS AND DEPARTMENTS.

THE GRADUATE SCHOOL. In the College of Liberal Arts and Sciences, the School of Engineering, the School of Education, the School of Law, the School of Medical Sciences and the School of Fine Arts, there are advanced courses leading to the degrees of master of arts and master of science, master of music, doctor of philosophy, and the higher engineering degrees. These courses have been organized into a Graduate School, open to graduates of this and, under certain conditions, other universities and colleges.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES. The College of Liberal Arts and Sciences offers instruction in literature, science and the arts, leading to the degree of bachelor of arts. It is the central department of the University and the foundation upon which all the rest are built. The courses of study are mainly elective and presume four years of residence work.

THE SCHOOL OF ENGINEERING offers courses in civil, electrical, mechanical, mining, chemical and municipal and sanitary engineering, leading to the degree of bachelor of science, requiring four years of residence work.

THE SCHOOL OF LAW offers three years of legal instruction, leading to the degree of bachelor of laws.

THE SCHOOL OF FINE ARTS offers courses in piano, organ, violin and violoncello playing, voice culture, drawing and painting, and vocal expression.

THE SCHOOL OF PHARMACY offers two, three and four years of work in pharmaceutical study.

THE SCHOOL OF MEDICINE offers a complete four-year medical course. The work of the first two years is done in the laboratories at the University; that of the second two years, in the clinical laboratories at Rosedale.

THE SUMMER SESSION (six weeks, or nine weeks, as the student elects) is intended to meet the wants of teachers and others who wish to pursue collegiate study but are unable to attend the regular sessions of the University. Collegiate credit is allowed for certain courses offered.

THE SCHOOL OF EDUCATION has been developed out of the former department of education, and now embraces in organic form the numerous university forces which contribute to the direct preparation of those who elect teaching as a profession.

THE UNIVERSITY EXTENSION DIVISION opens various lines of activity to students who are not able to pursue courses in residence at the University. It includes lectures, correspondence courses, and the furnishing of general information.

THE LIBRARY. The library of the University is regarded as the center of the instructional life of the University. It is used to supplement the instruction in all departments, and also for wide reading for purposes of general information by students of the University.

THE GYMNASIUM. The gymnasium is the center of the physical education of the students in general, and also of the athletics of the University.

THE MUSEUMS. The museums are used for the storing of collections valuable from a scientific point of view, and also for the purpose of supplementing scientific instruction.

THE GEOLOGICAL SURVEY. The University is authorized by law to carry on the State Geological Survey of Kansas, giving special attention to natural products of economic importance. The Chancellor of the University is *ex officio* director of the survey, and the work is carried on under the immediate direction of the State Geologist who is Professor of Geology in the University, assisted by other University officers. As the survey progresses reports are published from time to time.

THE ENGINEERING EXPERIMENT STATION. This department of university activity has been organized for the purpose of effectively using the well-equipped laboratories of the University for the investigation of technical problems of importance in the industrial development of the state. A number of lines of investigation, leading to the better development and utilization of the resources of the state, have already been pursued to a successful outcome, and others are now being carried on. It is the purpose of the Experiment Station to encourage research with this object in view, and to publish the results.

GOVERNMENT.

The legislature of 1913 passed an act providing for the government of the University of Kansas, the Kansas State Normal Schools, the Kansas State Agricultural College, the Kansas School for Deaf, and the Kansas School for Blind, and repealing former legislation inconsistent with the provisions of the new act. This act provides for a State Board of Administration, to consist of three members to be appointed by the governor, not more than two of whom shall belong to any one political party, and not more than one of whom shall be a graduate of any of the institutions named. Not more than one member shall be from any one congressional district. The term of office is four years. The board maintains a business office at each of the state educational institutions under its control, and also an office at the seat of government. The State Board of Administration is vested with all the powers belonging heretofore to the Board of Regents of the University.

DISCIPLINE.

That the generosity of the state may not be abused, and that perfect justice may be done all who are earnestly striving to make the best possible use of the opportunities offered, there is but a single requirement, *unquestionable deportment and strict attention to university duties.*

THE UNIVERSITY AND THE STATE.

The University of Kansas is an integral part of the free public-school system of the state. It was established by an act of the legislature of 1864, and its object, as defined by that act, is to "provide the inhabitants of the state with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts." In realizing the object thus set for it, the University stands in direct connection with the high schools of the state. It begins where the high school ends, and thus completes, for so many as avail themselves of the advantages, the thorough education which the state endeavors to provide. Persons who have completed, in any accredited high school or other institution of learning having educational standing, the work required in preparation for the University, are admitted to its privileges without examination. For this reason the high schools and academies of the state have in general arranged their courses of study in accordance with the University requirements. Though the University was established and is maintained, primarily, for the young men and women of Kansas, it also opens its doors, at very moderate tuition, to the young men and women of other states.

As the head of the public educational system of Kansas, the University endeavors to encourage whatever may contribute to the higher intellectual and moral interests of the state. Believing that the strength and value of the University are measured by its service to the state at large, and wishing to reach as many of the citizens as possible in a helpful and stimulating way, the authorities cordially invite all who desire to pursue courses of study or investigation to connect themselves with the University. All who are seeking special information or self-culture and the highest type of civic life and influence should feel that, by the generosity of the state, advice and information are freely placed at their command.

HISTORY AND LOCATION.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggles provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for

the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The Board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first Faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was extended into a regular medical course, constituting the work of the School of Medicine. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences. The School of Education and the Division of University Extension were established in 1909.

The Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott. Prof. Francis H. Snow, who had been a member of the Faculty from the beginning, was elected Chancellor in 1890. In 1901, on account of failing health, Chancellor Snow resigned. Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. Frank Strong, Ph. D., was elected in April, 1902, and assumed the office August 1 of that year.

The University is situated on a projection of the bluffs bordering the Kansas river valley, known as Mount Oread. There is in America no more beautiful location for a seat of learning, and no more inspiring outlook than is commanded by the campus and buildings of the University.

Lawrence is a city of about 15,000 inhabitants and is forty

miles west of Kansas City. It is a healthful city, and offers many advantages as a place of residence for those desiring the benefits afforded by the University.

BUILDINGS AND GROUNDS.

The University campus comprises 163.5 acres at Lawrence, and 7.5 acres in the campus of the Medical School at Rosedale. There are twenty University buildings, fifteen of which were erected by the state and five by private gifts. Seventeen of these buildings are used for purposes of instruction, the remaining three being the service building, heating plant and the Chancellor's residence.

NORTH COLLEGE.

This structure was the first building to be erected. The funds for its erection, \$20,000, were secured through gifts of citizens. It is fifty feet square, three stories high, and contains eighteen rooms. It was completed in 1866, from which time until 1872 the entire work of the University was carried on within its walls. In 1872 Fraser Hall was completed, and North College was for a time closed. In 1890 it was again opened, and, until the end of the school year 1893-'94, was used by the School of Law. It is at present used by the School of Fine Arts.

FRASER HALL.

This building was erected in 1872. The original cost of the building was \$140,500. Of this sum \$90,500 was secured from the sale of bonds issued by the city of Lawrence and \$50,000 appropriated by the state legislature. The legislature has appropriated \$42,975 for improvements and repairs on it. The building is 246 feet in extreme length, 98 feet wide in the center, wings 62 feet each. There are about sixty rooms in Fraser Hall, of which one, the main audience room containing an electric pipe organ, is 94 feet long and 56 feet wide. This room has a seating capacity of 1200. In this building are located the executive offices of the University, including the Chancellor's office, the office of the Secretary, and the office of the Registrar. The building is named in honor of Gen. John Fraser, the first active Chancellor of the University.

MEDICAL HALL.

This building was erected in 1884, at a cost of \$12,000—\$8000 from interest on the permanent endowment fund of the University, and \$4000 appropriated by the legislature. It is in the form of a T, the main part, extending east and west, being 80 by 35 feet; and the L north of this is 40 feet square. The physiological laboratory is located in a large room on the second floor. The east wing of this floor is occupied as a lecture room, and is capable of seating seventy-five students. The entire basement is occupied by the department of journalism, with press, composing and editorial rooms.

SNOW HALL.

This structure was erected in 1886, from a \$50,000 appropriation by the legislature. It is 110 feet in length by 100 feet wide, two stories in height, each 16 feet in the clear, is provided with an attic of 12 feet, and with a basement almost entirely above-ground. The geological department occupies the two southeast rooms of the first floor, and the departments of zoölogy and botany use the large west room of this floor for laboratory purposes. The entire second floor is devoted to laboratories for advanced work in botany and zoölogy. The west room of the third floor is used for geological collections. The south room is the botanical museum. The department of drawing and painting occupies the remainder of the third floor. On the first floor of the east half is a large lecture room with accommodations for 200 students. The building is named in honor of Professor Francis Huntington Snow.

HEATING PLANT.

This building was erected by the state in 1887, at a cost of \$16,000. For many years part of the structure was used by the Engineering School for shop-work purposes. On March 22, 1898, fire almost completely destroyed the building. In the same year it was rebuilt and equipped at a cost of \$30,000 from funds lent by the citizens of Lawrence. This money was returned by the legislature of 1899. An addition was built in 1908, at a cost of \$2500, appropriated by the legislature.

SPOONER LIBRARY.

This building was erected in 1894, at a cost of \$75,000, by the generosity of William B. Spooner, of Boston. Its length is 112 feet and its extreme width 50 feet. The building is two stories high, with a basement the greater part of which is above-ground. On the first or main floor are located the general reading room, a newspaper room, and the Librarian's and Cataloguer's offices. The reading room is admirably arranged and lighted. In the newspaper room are kept the county and city weeklies and dailies published within the state. In addition, dailies published in all the larger cities of the United States are kept on file. The second floor of the building is also devoted to library purposes. In the basement are seminary rooms used for study purposes by the various departments. The building is lighted throughout by electricity.

CHANCELLOR'S RESIDENCE.

This building was erected in 1894, at a cost of \$12,000, from the William B. Spooner bequest. By action of the state legislature it was occupied by Dr. Francis H. Snow until his death in 1908. It is now the official residence of the Chancellor of the University.

BLAKE HALL.

This building is of Cleveland, Ohio, sandstone, and was erected by the state in 1895 at a cost of \$58,000. The building is approximately 110 feet in length by 70 feet in extreme width, and contains two stories, a high basement and an unfinished third story. It is occupied chiefly by the department of physics and electrical engineering, and is named for Dr. Lucien Ira Blake, formerly professor of physics and electrical engineering at the University.

FOWLER SHOPS.

This building was completed in 1899 at a cost of \$21,000, and is the gift of Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted primarily to instruction in machine construction methods, containing woodworking and pattern-making room, forge room, and metal-working room or machine shop. A foundry has been equipped in a room vacated by the removal of the power plant. The hydraulic laboratories of the Engineering School occupy rooms temporarily in this building. The building is of native stone, and is 224 feet long by 50 feet in width, two stories high, with attic and tower, containing about 20,000 square feet of floor space for instructional purposes.

THE CHEMISTRY AND PHARMACY BUILDING.

This building was completed in 1900 at a cost of \$70,000, appropriated by the legislature. The material used is native limestone, laid in horizontal courses, with recessed pointing. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy. It is 187 feet long, and its greatest width is 70 feet. The ground plan shows a central portion devoted to offices, private laboratories, supply rooms, balance rooms, and smaller recitation rooms, and two wings. The building is three stories in height, with a basement of the same height as each of the stories above; beneath the basement floor there is an air space of four feet down to the solid rock on which the foundations are laid. The system of heating and ventilation, which has been arranged with special care, includes a fan blower, run by electric power, which forces tempered air over steam coils and thence into the laboratories and lecture rooms. The air thus brought into the rooms is carried out by hoods on the sides of the rooms, which are connected with nine-inch tiles terminating in the chimneys above the roof, each hood being ventilated by an independent flue.

THE NATURAL HISTORY MUSEUM BUILDING.

This building, erected by the state in 1902 at a cost of \$75,000, furnishes a safe home for the natural-history collections, estimated to be worth \$300,000. The upper floor is devoted to the collections in entomology and paleontology. The remainder of the building is used for the exhibition of mammals and birds.

The offices are occupied by the curator of mammals, birds, and fishes, and the curator of the entomological collections. The workrooms of the taxidermist are in the basement. Part of the basement is occupied by the School of Medicine.

GREEN HALL.

Green Hall, erected by legislative appropriation, at a cost of \$65,000, was occupied by the School of Law in the fall of 1905. It is a two-story structure, with basement, is 120 feet long and 60 feet wide, and is made of gray pressed brick. The second story is practically given over to the law library and reading room, and is approximately 116 feet long by 40 feet wide. This building is named in honor of the Dean of the School of Law, James Woods Green.

THE ROBINSON AUDITORIUM-GYMNASIUM.

The legislature of 1905 appropriated \$100,000 for a building for a gymnasium and auditorium. This building is 178 feet long by 144 feet wide at the wings, with an average width of 90 feet, and has three stories, including the basement. In the basement are arranged locker rooms, baths, dressing rooms for the athletic teams, and swimming pool. The first story contains a gymnasium for men and another for women, a trophy and reception room, and offices for the directors of the work for men and women, respectively. The second story contains a clear floor space 70 x 127 feet. A running track in the gallery extends entirely around this floor. By removing the apparatus this floor may be transformed into an auditorium with a seating capacity of 3000 people. Around this auditorium, and opening out from it, are rooms for handball, boxing, wrestling, fencing, a room for special classes, and a Faculty room. The arrangement and equipment of this building are modern in every particular. The building is named in honor of Charles Robinson, first governor of Kansas, and his wife, Mrs. Sara T. D. Robinson.

THE ELEANOR TAYLOR BELL MEMORIAL HOSPITAL.

The first section of the Bell Memorial Hospital was erected in 1905 on property given to the University for that purpose by Dr. Simeon B. Bell, of Rosedale, and named in memory of his wife. This medical pavilion cost about \$30,000. In 1911 a second section in connection with the first was built through an appropriation by the legislature of \$50,000. The first section was remodeled for use largely as a nurses' home. It also contains the general dining rooms, kitchens, laundry rooms, and so forth. The second section is a well constructed fire-proof building and is an attractive and efficient hospital. It has four floors with large porches commanding a beautiful view to the west and southwest. The combined hospital has about seventy-six beds and is used as a teaching hospital. To it are sent county patients under the indigent poor law, the crippled children law, and the obstetrical service law. The new hospital was opened for service in October, 1911.

THE CLINICAL LABORATORY.

This forms an intrinsic part of the Eleanor Taylor Bell Memorial Hospital, and is a brick building 50 x 100 feet, of three stories, erected at a cost of \$40,000. It has concrete floors and a general fireproof construction. The teaching laboratory is a room 100 x 30 feet. From this open four small workrooms for instructors. There are three lecture rooms, a library, offices for the Dean and Superintendent, and also a morgue and an animal room. This building crowns the hill, and will eventually be surrounded by five or six hospital pavilions, similar to the medical pavilion already built.

THE SERVICE BUILDING.

This building, erected in 1908, contains the office of the superintendent of buildings and grounds, a pipe shop, a carpenter shop, a paint shop, rooms for storage of supplies, and also houses the University fire-fighting apparatus.

MARVIN HALL.

This building was erected at a cost of about \$90,000, appropriated by the legislature of 1907, and contains equipment for the general work of the School of Engineering. It is a four-story structure, the three upper floors being devoted to classrooms, drafting rooms, offices, a school library, instrument rooms, blue-printing rooms, etc., and the basement principally to laboratories. It is 187 feet on the front by 64 feet in depth, with a wing at the east end 56 feet wide extending 29 feet to the rear. The heating, ventilating and lighting systems are complete and modern in every respect. This building is named in honor of F. O. Marvin, Dean of the School of Engineering.

POWER PLANT AND MECHANICAL LABORATORY.

This building was completed in 1909 at a cost of about \$23,000. It is built of native stone, is 100 feet by 94 feet, and in two distinct sections. It will be used for the purposes indicated by the name, and is the beginning of a system of engineering laboratories which are intended to number five when completed. The distinctive feature of the building is the roof, designed to give the maximum of light for interior work, it being of the "saw-tooth" type characteristic of many recent important manufacturing plants and laboratories. In the power-plant section are power-generating machinery for lights and power for the University and the pumps for regular water service and fire protection, valued at \$37,000. The laboratory section contains equipment for instruction in technical engineering work, particularly in power development, valued at \$25,000.

HAWORTH HALL.

The building for geology and mining was completed in August, 1909. It is a three-story building, approximately 60 feet by 110 feet in size, with an annex for mining and ore-dressing

laboratories, 40 by 80 feet. The first floor of the building provides two offices, one private laboratory for advanced quantitative work, one large general blowpipe laboratory for mineralogy, one classroom, a drafting room, a fireproof vault for preserving drawings, manuscripts, etc., a museum room for storing mining machinery, and other lesser rooms. The annex provides laboratory facilities for various phases of mining and ore dressing, and is equipped with necessary machinery driven by electric motors, and other appliances for illustrating fully modern methods of ore separation. The entire lower story has a cement floor throughout, and the tables in the blowpipe laboratory are made of metal and concrete in order to guard against danger from fire. The second floor contains two large museum rooms for mineralogy, economic and dynamic geology. They are equipped with oak-veneered, plate-glass show cases around the entire walls of the two rooms, which provide nearly 1000 feet of shelving. The remaining floor space will be occupied by additional cases for museum material and work tables for advanced students. Two office rooms also are on this floor. The third floor contains a library room, two lecture rooms, a large laboratory for students in elementary geology, a petrographic laboratory, and a private laboratory for advanced research. The building is lighted throughout by electricity, is heated by steam, and is commodious and useful. A \$7500 clay laboratory was added to the building in 1911. This building is named in honor of Erasmus Haworth, professor of geology and state geologist.

LIBERAL ARTS BUILDING.

The east wing of a Liberal Arts Building which, when completed, will cost \$500,000, was erected in 1911, and is now occupied by several departments of the College. The foundation for the central section of the building is in course of construction.

UNIVERSITY ALUMNI ASSOCIATION.

OFFICERS OF THE ALUMNI ASSOCIATION.

DIRECTORS.

CHAPEL EXERCISES. Exercises are held in the University chapel every morning from 10 to 10:15. Though attendance is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They

consist of the doxology, Scripture reading, prayer, a hymn, and occasional addresses by the Chancellor and others. On Friday mornings the chapel exercises are held from 10 to 10:30, at which time addresses are made by speakers from abroad or by members of the Faculty of the University. During the academic year of 1912-'13 to May 1, addresses were delivered by Chancellor Frank Strong; Rev. Noble S. Elderkin, of Lawrence; Rev. Burris A. Jenkins, of Kansas City, Mo.; Hon. W. Y. Morgan, of Hutchinson; Ex-Gov. W. R. Stubbs, of Lawrence; Mr. Jacob Billikopf, of Kansas City, Mo.; Pres. S. E. Price, of Ottawa University; Mr. Arthur Rugh, of New York City; Pres. Charles Nash, of Pacific Theological Seminary; Dr. S. W. Williston, of Chicago University; Hon. Robert Stone, of Topeka; Rev. E. C. Smith, of Chicago; Hon. H. G. Larimer, of Topeka; Justice H. F. Mason, of the Kansas Supreme Court; Hon. Albert T. Reid, of Topeka; Rev. T. W. Huston, of Lansing; Prof. Paul E. More, of New York City; Dr. Samuel Z. Battin, of New York City; Pres. Frank K. Sanders, of Washburn College; Dr. J. W. Hudson, of the University of Missouri.

On Tuesday mornings the chapel address ordinarily is delivered by a member of the University Faculty. The following Faculty members and others were speakers during the year 1912-'13: Dr. M. T. Sudler, W. H. Carruth, Olin Templin, D. C. Croissant, S. J. Hunter, E. H. S. Bailey, C. A. Dykstra, G. A. Gesell, A. L. Owen, F. C. Dockeray, H. W. Emerson, C. G. Dunlap, J. Sundwall, A. M. Wilcox, D. C. Rogers, Roy Stockwell, Geo. O. Foster.

UNIVERSITY VESPER SERVICE. This is held Sunday afternoons. The service is largely musical, though there is usually also a brief address. The music, aside from the congregational singing, is furnished by the Vesper Chorus, conducted by the professor of voice training.

THE UNIVERSITY OF KANSAS INSTITUTE FOR RELIGIOUS EDUCATION. This is held during one week in the spring of each year. In 1913 the institute occurred March 14-20. The institute has in successive years been in charge of Dr. Frank K. Sanders, now president of Washburn College, Professor Patton, now of McGill University, Dr. Lyman Abbott, editor of the *Outlook*, Prof. Hugh Black, of Union Theological Seminary, Pres. Frank K. Sanders and Dr. Washington Gladden, of Columbus, Ohio, Prof. Shailer Mathews, of the University of Chicago, Pres. Frank K. Sanders, and Pres. Henry Churchill King, of Oberlin College, Prof. Gerald Birney Smith, of the University of Chicago, Pres. Frank K. Sanders.

YOUNG MEN'S CHRISTIAN ASSOCIATION. This is the largest organization among the students of the University, over five hundred men being members. The association is strictly non-sectarian in character. It stands for clean, Christian manhood in the University and aggressive Christian work for and by students. The various activities of the association are carried on by the members themselves, under the direction of a board of

directors, and a general secretary whose entire time is devoted to the work. Meetings for men are held each week, at most of which an address is delivered by an out-of-town speaker.

In coöperation with the churches and the Christian and Presbyterian Bible chairs, the association offers a large number of Bible-study courses, under the leadership of University professors and advanced students. A number of courses in the study of missions are also given. The association is largely responsible for the support of its former general secretary, Mr. H. C. Herman, who is now engaged in association work in India.

Through the courtesy of the University Bible chair of the Christian Woman's Board of Missions, the association shares large and commodious quarters at Myers Hall, one block north of the University library. Here are held not only the weekly religious meetings of the association, but social affairs from time to time, Bible classes, meetings of the various association committees, etc.

The association welcomes students at the opening of the University, aiding them in finding suitable rooming and boarding places. During the summer months the association makes a canvass of the student district for rooms, and its information as to rooms and board is most complete. The employment bureau, which is conducted jointly by the association and the University, renders all assistance possible to students desiring to earn a part of their expenses. The association issues a student's handbook, giving valuable information to prospective students, which will be ready for distribution about September 1, and will be sent free upon request. Address all correspondence to the general secretary, Y. M. C. A., 1300 Oread avenue, Lawrence, Kan.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. This is an organization of 300 University women, with a permanent sustaining membership of over 100 Faculty women and alumnæ, who give the association their active support. The association employs a general secretary, who gives all her time to the direction and supervision of its work. The purpose of the association is five-fold: (1) To develop and deepen the spiritual and moral life of the young women of the University, and to bring to them the conception that no part of their life lies outside of their religion; (2) to be the medium between the women students of the University and the churches of Lawrence; (3) to give practical aid to women students whenever they are in need of it; (4) to be one of the agencies to create the best social standards; (5) to train young women to become efficient workers in church and philanthropic organizations.

Religious services are held weekly, on Wednesday afternoons at 4:45, in room 110, Fraser Hall. During the opening week of the fall term members of the association may be found in the association rest room (room 114, Fraser Hall), ready to assist Freshman girls in registering and finding classrooms and rooming and boarding places.

Information concerning boarding and rooming places and

employment for girls may be obtained by applying to the general secretary, Miss Mollie Carroll, 1134 Louisiana street, Lawrence, Kan.

RELATION TO CITY CHURCHES. The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons from time to time, and the young people's societies arrange for social gatherings to which the students especially are invited. There are also organized, in the principal Sunday schools of the city, classes for University students, a number of these classes being in charge of University professors.

By these means the students are brought into close contact with the religious life of Lawrence. A religious census of the student body during the past few years shows that an average of eighty-seven per cent of the students have religious preferences, sixty-three per cent are church members, and that a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

THE BIBLE CHAIR. April 1, 1901, the Woman's Board of Missions of the Christian Church established a chair of Biblical instruction at Lawrence for the benefit of University students. A site was purchased on Mount Oread, adjoining the University campus, where, in a building (Myers Hall) erected for the purpose, the work is carried on. To accommodate the growing work, a \$10,000 addition was made to Myers Hall in 1911, affording more lecture rooms and offices, and an assembly room seating five hundred. In this enlarged hall a room was added for a library and museum of missions.

There is no organic relation between the Bible chair and the University. Its support rests entirely upon private gifts. No fees are charged. The privileges are offered to all students, without regard to their religious affiliations, and the courses are arranged to meet their convenience.

The instruction is nonsectarian. The purpose of the work is to give students a more intimate acquaintance with the Bible, and to render them assistance in their religious life.

The courses include studies in both the Old and New Testaments, and the history of missions, and the great religions of the world. Work in the Hebrew language is offered. Wallace C. Payne, A. B., A. M., (Bethany College), B. D., (Yale University), occupies the chair. Mrs. W. C. Payne is associated with him.

During the twelve years now closing about 2600 students have taken advantage of the opportunity thus given to acquaint themselves more fully with the Bible.

Mrs. W. C. Payne will lecture upon "The Women of the Bible," "The History of Missions," "The Lives of Great Missionaries," and "The Parables of Jesus."

In addition to the studies given at the lecture room, 1300 Oread avenue, during the school year 1913-'14, special attention will be given group classes for Bible study in private, fraternity and sorority houses.

The library, with valuable works on Bible study, missions, religion, Christian sociology, the Sunday school, and related subjects, is accessible to all.

Any one desirous of further information may address Prof. W. C. Payne, Myers Hall, 1300 Oread avenue, Lawrence, Kan.

WESTMINSTER ASSOCIATION. In 1905 the Presbyterians of Kansas organized Westminster Association for the purpose of offering Biblical instruction to all students and affording pastoral care for Presbyterian students of the University. On October 7, 1910, Westminster Hall, the gift of W. W. Cockins, Lawrence, Kan., was dedicated. The hall is well adapted to class work and also affords a center for the social life of the students. In June, 1911, Rev. Stanton Olinger, A. B., A. M., (Kansas University), B. D., (Princeton), was elected principal. Mrs. Olinger is associated with him in the work of the hall.

The following courses are offered: A four-year course in Bible history; the Bible and Modern Science; the Lives and Doctrines of the Prophets; Pauline Theology; Missions and World Problems; Comparative Religions; the Sources of the Bible; and the Evidences of Christianity.

There is no organic connection with the University. The teaching is nonsectarian and without charge. All students are welcome to the social life of the hall. Hon. Thomas Potter, of Peabody, has placed in the hall the Dwight Potter memorial library for the use of the students.

All correspondence relative to the work of the Westminster Association should be addressed to Prin. Stanton Olinger, 1221 Oread Ave., Lawrence, Kan.

SOCIAL AND LITERARY.

ASSOCIATION OF THE LADIES OF THE FACULTY. The women connected with the University as instructors and the wives of instructors form an association whose purpose is to promote the social welfare of the young women students, and to further an acquaintance between themselves and these students. To this end, besides holding general receptions and meetings for the discussion of questions of common interest, twice a month, on Fridays, the Ladies of the Faculty give an afternoon tea for the young women of the University. A committee of the association meet the young women at the University during the opening weeks of the year, and assist them in finding suitable boarding and rooming places. Students are always welcome in the homes of the Faculty.

THE PHI BETA KAPPA SOCIETY. The Kansas Alpha chapter of this society was organized in April, 1890. The object of the society is, primarily, the promotion of scholarship in the University. To this end, a portion of the members of the graduating class of the College, never to exceed one-sixth, who have

made high records for scholarship in their University studies, are elected to membership.

GERMAN CLUB. The membership of this club, which meets once a week in the large German recitation room, consists of such students as have made sufficient progress in German to take active part in the programs. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language, and to promote an interest in all that is German. Musical and literary programs, rendered by the students, alternate with talks or lectures by members of the Faculty or outside speakers, and the meetings are conducted exclusively in German. A special feature in connection with the club is the German play, which is given each year by the students of the department.

THE QUILL CLUB is an organization of students and instructors especially interested in English composition, which meets to hear and discuss original productions presented by members and others. The best of this material is published by the club.

ENGLISH JOURNAL CLUB. This is composed of the instructors and advanced students in the department of English language and literature. It holds meetings twice a month, at which the members report upon and discuss the leading journals devoted to English scholarship and research.

FRENCH CLUB. The instructors and students in the French department compose the *Cercle Français*, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, which is given towards the close of the year by the students of the department.

THE GREEK SYMPOSIUM consists of the instructors and students of the Greek department, who meet once a month for the reading of papers and discussion of topics which are either too general or too special for class work. The meetings are held in the evening, at the home of one of the instructors, and the special program is followed by a social hour.

SPANISH CLUB. The Centro Español has been formed on the same general lines as the French club for those students who wish to acquire facility in the use of spoken Spanish. At its weekly meetings, besides programs of a literary character, news of the Spanish-speaking world is reported and discussed. The Spanish play gives further opportunity to acquire readiness in speaking.

SCIENTIFIC.

THE SIGMA XI SOCIETY. The Iota chapter of this scientific honorary society was established at the University in 1890. The society confers the honor of election to membership upon instructors and students who have shown special aptitude along scien-

tific lines, especially with regard to research work. This chapter holds monthly meetings for the reading and discussion of scientific papers, and is the center about which the scientific interests of the University are gathered.

CHEMICAL CLUB. This is composed of the instructors and advanced students in the department of chemistry and pharmacy. Weekly meetings are held, and the programs include reports on research work by instructors and students, reports on scientific meetings and associations, reviews of new books and important articles in chemical journals, and notices of important inventions and new chemical processes.

CIVIL ENGINEERING SOCIETY. This is maintained by students, under the guidance of the instructors in the department. It holds monthly meetings and is frequently addressed by practicing engineers, besides maintaining a program of papers and discussions.

UNIVERSITY OF KANSAS BRANCH OF THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS. This is composed of instructors and students who are associate members or student members of the national organization. It holds biweekly meetings, for the discussion of papers presented before the national meetings of the association, and other papers. Current engineering literature is reviewed, and as often as possible addresses by prominent engineers are secured, with the aim of acquainting the students with current engineering practice and problems. All electrical engineering students are free to attend these meetings.

UNIVERSITY OF KANSAS' STUDENT SECTION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS. This is essentially a student organization, under the supervision of a Faculty member of the national society. Weekly meetings are held for reports on current engineering literature, with occasional addresses by outside engineers. An annual meeting is held in December, usually with several visiting members of the national society giving technical papers.

AFFILIATED STUDENTS' SOCIETY OF THE AMERICAN INSTITUTE OF MINING ENGINEERS. This is a society composed of junior and senior students and Faculty members of the department, which enjoys the advantage of association with the Institute. Meetings are held monthly for the discussion of the publications of the Institute and the presentation of papers. All students in the last three years of the course meet each week in the Mining Journal for the consideration of professional literature and discussion of subjects of interest. Addresses are frequently given by University engineers.

THE PHARMACEUTICAL SOCIETY. This society was organized in December, 1886, by students and instructors of the department, for the purpose of assisting each other in the study of sciences especially related to the art of pharmacy, in the practical applications of the same, and for friendly intercourse. Meetings are held biweekly during the school year.

DEBATING.

DEBATING COUNCIL. The council is made up of three members of the Faculty appointed by the University Council, and two representatives chosen from each of the literary societies of the University; and under its supervision are held all preliminary and interstate debates. At present, annual debates are held with the University of Colorado, the University of Oklahoma, and the University of Missouri. The K. U. Debating Society is open to all men of the University. This society meets weekly, and is interested, primarily, in effective argumentative public speaking.

DRAMATICS.

DRAMATIC CLUBS. The students of the University maintain three dramatic clubs for the study and the presentation of modern plays. Membership in these clubs is open to all students and is secured by dramatic trials held at stated intervals.

MUSICAL.

ORCHESTRA. Young men and women of the University form an orchestra each year to furnish music for special convocations, and to make a study of orchestral masterpieces. The orchestra is under the direction of the Dean of the School of Fine Arts. Annual concerts are given.

WOMEN'S GLEE CLUB. The Women's Glee Club is under the direction of the head of the department of voice training. Membership is competitive. An annual concert is given.

MEN'S GLEE CLUB. The Men's Glee Club is under the direction of the head of the department of voice training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Council. The annual concert is an important University event.

VESPER CHORUS. The Vesper Chorus is composed of leading singers of the city and University, and takes part in the weekly vesper services. It is under the direction of the professor of voice training.

BAND. The University Band is a permanent organization, fully uniformed, and directed by a professional leader. The band furnishes music at the various athletic contests held at the University and for other student gatherings, and gives several concerts annually.

THE FESTIVAL CHORUS. The Festival Chorus is composed of musical people of Lawrence and students of the University. The director is the Dean of the School of Fine Arts. The Festival Chorus undertakes the chorus work for the annual spring music festival at Lawrence.

OPERA. An opera is given each year by students of the voice department, accompanied by the University Orchestra. The opera for 1912 was "The Yeoman of the Guard."

CONCERTS, ADDRESSES, AND ART EXHIBITIONS.

CONCERTS AND RECITALS, 1912-'13.

- SEPTEMBER Song recital, by Enrico Palmetto.
- OCTOBER Piano recital, by Alfred Calzin.
First Faculty recital.
First student recital.
- NOVEMBER United States Marine Band.
Second Faculty recital.
University Orchestra concert.
Piano recital, by Edward Baxter Perry.
Two student recitals.
- DECEMBER Violin recital, by Axel Skovgaard.
Christmas concert.
Student recital.
Band concert.
- JANUARY Chamber music recital, by the Pasmore Trio.
Two student recitals.
- FEBRUARY Song recital, by Madame Barrachia.
Student recital.
Glee Club concert.
Mandolin Club concert.
- MARCH Song recital, by Dorothea North.
Girls' Glee Club concert.
Band concert.
Two student recitals.
- APRIL Organ recital, by Albert Anderson.
Two student recitals.
Graduating recitals.
Music festival.—Three concerts, first by Enrico Palmetto, tenor, and Madam Chisholm-Ohrmann, soprano; second and third by Minneapolis Symphony Orchestra and soloists.
- MAY Graduating recitals.
Student recitals.
- JUNE Commencement concert.
Commencement organ recital, by Dean Skilton.

ADDRESSES.

The following University addresses were delivered at the University during commencement week, 1912:

JUNE 2, 1912. Baccalaureate sermon, Edward Alfred Steiner, B. D., professor of applied Christianity in Grinnell College.

JUNE 4, 1912. Alumni address, Ethel Allen Hamilton, A. B. '82, A. M. '85. Subject: "The Meaning of Success."

JUNE 5, 1912. Commencement address, Hamilton Wright Mabie, A. M., LL. D., associate editor of *The Outlook*, New York City. Subject: "Works and Days."

The following general University addresses were delivered during the academic year 1912-'13; all University students were admitted to these addresses without charge:

DECEMBER 6. Judge Merritt W. Pinckney, of Chicago. Subject: "The Juvenile Court and Dependent and Delinquent Children of Chicago."

DECEMBER 6. Chief Justice John B. Winslow, of the supreme court of Wisconsin. Subject: "A Judicial Recall that Failed."

DECEMBER 5-6. Prof. S. W. Williston, Ph. D., of the University of Chicago. Two lectures under the auspices of Sigma Xi honorary society. Subjects: "Early Animals of North America"; "Some Laws of Evolution of the Vertebrates."

DECEMBER 18. Miss Anna E. George, head mistress Montessori School, Washington, D. C. Subject: "The Montessori System of Education."

FEBRUARY 17-24. Mr. Paul Elmer More, editor of *The Nation*, New York City. Five lectures on "The Drift of Romanticism":

1. "William Beckford—Rebellious Egotism and the 'Flaming Heart.'"
2. "Cardinal Newman—Romanticism in Religion."
3. "Walter Pater—Æstheticism."
4. "Huxley—The Merging of Romanticism and Science."
5. "Fiona Macleod—The End of Revery."

ART EXHIBITIONS.

An annual exhibition of works of art is held at the University, together with a course of lectures upon subjects related to the fine arts. The exhibition this year was held February 9-28. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

ATHLETIC.

ATHLETIC ASSOCIATION. This association is organized to encourage and promote the physical education and hygienic training of matriculates and graduates of the University of Kansas, and to foster and supervise athletic games, such as baseball, boating, football, tennis, track athletics, basket ball, and similar sports, in connection with the University. Membership in the association is open to all students, graduates, officials, and members of the Faculty.

THE GOLF CLUB has its links on the University grounds. It is a self-supporting, independent organization, and membership is open to students of the University.

GENERAL ATHLETICS. The general athletics of the University include football, baseball, basket ball, tennis, and other forms of exercise.

INTERCOLLEGIATE GAMES are played at various times during the year with the teams of neighboring universities.

CONTROL. All forms of exercises, athletics and games are under the control of the director of the gymnasium and his assistants.

THE ATHLETIC BOARD. All intercollegiate athletic contests are under the control of the University Athletic Board, composed of four students elected by the students, four Faculty members elected by the University Council, the Chancellor of the University, the president of the Athletic Association, and the professor of physical education. The last three are *ex officio* members.

RULES. The University Council has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants.

UNIVERSITY PUBLICATIONS.

THE UNIVERSITY OF KANSAS SCIENCE BULLETIN, formerly the *Kansas University Quarterly*, is maintained by the University as the medium for the publication of the results of original research by members of the University. Papers are published in it only on recommendation of the committee of publication, which committee is composed of five members of the scientific Faculty. Formerly the *Quarterly* was issued at regular intervals, as indicated by the title, but numbers of the present series appear without regard to specific dates. A volume consists of about 400 pages, with the necessary illustrations. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication. Exchanges with similar publications of other colleges or universities and learned societies are solicited. Communications should be addressed to the University of Kansas Science Bulletin.

UNIVERSITY OF KANSAS STUDIES, HUMANISTIC SERIES, is a new publication, which has been instituted by the Board of Regents for the presentation of the results of research along humanistic lines. The numbers will be issued at irregular intervals, but it is intended to issue three each year. Each number will be a complete monograph, and the price will vary with its size and cost of publication. Arrangements for exchange may be made by addressing the editor.

THE BULLETIN OF THE ENGINEERING EXPERIMENT STATION. Reports are issued from time to time as the results of investigations become available for publication. Bulletins are issued in a regular series, numbered consecutively, the first number appearing in the winter of 1909-'10.

THE UNIVERSITY GEOLOGICAL SURVEY REPORTS are issued from time to time as material for them is gathered.

THE UNIVERSITY ENTOMOLOGICAL BULLETINS are reports issued in regular series from time to time, comprising the results of entomological investigations conducted by the University. These deal in part with applied problems of practical value re-

ferred to the University by various interests of the state, and in part with fundamental research problems presented by such investigations. These publications will be sent free to any citizen of the state upon application to the Chancellor of the University.

THE GRADUATE MAGAZINE is published monthly during the academic year by the Alumni Association of the University. Each volume contains the formal University addresses of the year and articles on subjects related to the University. Departments containing news-matter of interest to alumni and former students are included in each number.

THE UNIVERSITY DAILY KANSAN is a newspaper published five times a week by the Kansas University Publishing Association, an organization of students of the University.

THE JAYHAWKER is the annual published each year by the Senior classes of the schools of the University.

THE KANSAS LAWYER is published monthly by the students of the School of Law, and is devoted to the interests of that school and the Kansas bar.

UNIVERSITY PRIZES.

THE WILLIAM J. BRYAN PRIZE FUND. Hon. William J. Bryan, of Lincoln, Neb., in 1898 presented the University \$250, to be used as follows: The sum is to be invested, and the yearly interest on the same is to be given that student presenting the best thesis on some one principle of our government. The details of the contest are entrusted to the Faculty of the University.

CONCERTS OFFERED TO KANSAS COMMUNITIES.

The School of Fine Arts is prepared to furnish soloists to take part in concerts, music festivals, or public celebrations, or to give entire recital programs by members of the music and dramatic Faculty and the University musical organizations. The following artists may be secured: Dean Charles S. Skilton, organ and lecture recitals; Prof. Carl A. Preyer, piano; Prof. C. Edward Hubach, tenor; Miss Olivia Olsson, contralto; Prof. Wort S. Morse, violin; also the University Orchestra of twenty-five pieces, the University Glee Club, and the University Band. Address the Dean of the School of Fine Arts.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position as teacher. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

UNIVERSITY PHYSICIAN.

A University physician has been appointed to look after sick students away from home; to consult with students in all matters relating to health, and to prevent, when possible, trivial ailments from becoming serious; to provide necessary temporary medical services gratuitously to students of the University; and to work with the University health committee in seeking out and eliminating special sources of infection and in preventing the spread of infectious and contagious diseases among the students of the University. A hospital is maintained on the campus. Dr. James Naismith director of physical education, has been appointed University physician, by the Board of Regents.

SPECIAL ACTIVITIES UNDER COMMISSION FROM THE STATE.

ANALYSIS OF FOOD AND DRUGS.

The legislature in 1905 passed a bill making it the duty of the chemistry departments of the University and the State Agricultural College, under the direction of the State Board of Health, to make analyses of samples of foods and beverages collected by any county or city board of health of the state of Kansas, and to make reports upon the same.

In conformity with this law, for the last four years the chemistry department of the University has examined a large number of food products, and the reports of these analyses have been published in the monthly *Bulletin* of the State Board of Health. The Kansas food and drugs act of February 14, 1907, requires analyses of drugs to be made by the pharmacy department at the University of Kansas, and of food products to be made by the chemistry departments at the University and the Agricultural College. A special laboratory has been fitted up for the analysis of drugs and another for the analysis of foods. These laboratories are completely furnished with the necessary materials, and a sufficient number of assistants are employed to carry on the work expeditiously.

WATER SURVEY.

During the session of the legislature held in 1907 a bill was passed providing for a survey of the waters of Kansas, to be carried on under the joint auspices of the State Board of Health and the United States Geological Survey. This work contemplated the complete determination of the mineral matter in all the large streams of the state and a study of the industrial waste and sewage in the streams. The first part of this work is completed and the results will be published by the department at Washington.

SANITARY CONTROL OF WATER SUPPLIES AND SEWERAGE SYSTEMS.

The legislatures of 1907 and 1909 passed laws giving to the State Board of Health a large degree of control over all public water supplies and sewerage systems of the state, and charging this board with the preservation of the purity of the waters of

the state, for the protection of the public health. The University is extensively coöperating with the State Board of Health in carrying these laws into effect. The secretary of the board and two members of the Faculty of the School of Engineering constitute the department of water and sewage of the board, which has this work directly in charge, while all the chemical and bacteriological analyses and tests necessary in the prosecution of the work are made at the University laboratories.

ENTOMOLOGICAL COMMISSION.

In 1907 the legislature created the State Entomological Commission. The field work of this commission is conducted by the departments of entomology at the University and the Agricultural College. The University has performed the work of inspecting nurseries and issuing certificates to them since the beginning of such requirements, in 1896. It has also conducted investigations in the interests of agriculture and horticulture. Under this commission the department of entomology at the University publishes from time to time the results of its work.

BACTERIOLOGICAL EXAMINATION OF WATER.

In connection with the United States Government Hydrographical Survey, the department of bacteriology has undertaken a series of tests of water from wells and various other sources. The aim of the work is largely the determination of the extent and source of water pollution through sewage and surface drainage.

FISH AND GAME WARDENSHIP.

It having developed on the death of the former fish and game warden that no appropriation had been made to carry on this important work, the Board of Regents offered to the governor of the state the services of Prof. L. L. Dyche until the legislature could take such action in the premises as might seem wise. This work is so important that Professor Dyche has been relieved from so much of his regular duties at the University as may be necessary to put the work of the fish and game wardens upon a scientific and economic basis, the University believing that in such action it is doing a work of economic value to Kansas.

CERAMICS.

In developing the natural resources of the state, few fields are richer for investigation than its clays. The University has entered upon this work. Coöperating with the Geological Survey, the department of mining engineering will analyze and test all native clays. The department of fine arts will make use of those found suitable for the production of artistic ware. The department is equipped with kilns, throw wheels and all appliances necessary to carry on the work. A thorough course in design is given to those taking the artistic treatment of clays.

FEEES.

College of Liberal Arts and Sciences.

School of Engineering.

School of Law.

School of Pharmacy.

Students taking the regular four-year course in pharmacy are registered during the first two years in both the School of Pharmacy and the College of Liberal Arts and Sciences, and may pay the College incidental fee so long as their work is confined to courses offered in the College.

School of Medicine.

(For special fees for clinical work, see under Clinical Department.)

Since September, 1909, two years of approved College work are required for admission to the School of Medicine. During the first year of the regular four-year course in medicine students are registered in both the School of Medicine and the College of Liberal Arts and Sciences, and will pay the College incidental fee for the first year; so during the second year they will pay the incidental fee of the School of Medicine.

School of Fine Arts.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Diploma fee, at graduation	5.00

(Special fees for fine arts students are given in detail in another part of this catalogue under School of Fine Arts, and in a special catalogue of the school.)

Graduate School.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state.....	10.00
for nonresidents	20.00
Diploma fee, for each degree.....	5 00

Summer Session.

Incidental fee, for residents of the state.....	\$10.00
for nonresidents	15.00

School of Education.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state.....	10.00
for nonresidents	20.00
Diploma fee, at graduation	5.00

Correspondence Department.

Incidental fee, for residents of the state, any school....	\$10.00
for nonresidents of the state, any school..	15.00

LABORATORY AND SHOP FEES.

Students are required to pay the actual cost of material of all kinds used in laboratories and shops. All the laboratories and shops of the University, and their equipment of desks, tables, balances, microscopes, instruments, models and other apparatus, engines, machinery and power for their operation are at the disposal of students, under the direction of their instructors. These desks, tables and benches will be further provided with individual sets of tools, working apparatus and equipment. At the end of the course, or earlier, at the discretion of the instructor, all the individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time.

Materials and apparatus of every kind consumed, wasted,

lost or broken in the manifold experiments and practice work in laboratories and shops must be paid for by the student.

In some departments a definite fee to cover cost of materials in a given course is fixed prior to the opening of each term. Such fees are payable at the Secretary's office at the time of enrollment and before beginning work in such course. A student, who for any reason is obliged to drop work in any laboratory course before completion, may receive a rebate of such portion of the fee as shall be determined by the head of the department concerned to be due him.

Other departments maintain storerooms, from which the student secures, at cost, material and apparatus as needed, giving coupons in payment. These coupons are sold at the Secretary's office in books of one, two and five dollars, and are accepted in all laboratories and shops maintaining such storerooms. Any coupons unused are redeemed in cash at the Secretary's office when the student has completed the course and checked in his individual equipment. Coupons issued during any school year, however, will not be good beyond the close of that school year.

OTHER EXPENSES.

Information concerning the location of rooming and boarding places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at from \$4 to \$7 a week. Day board in private families and at city restaurants may be obtained for \$3.50 to \$5 a week. Day board in clubs varies from \$3.50 to \$4 a week. Furnished rooms, usually occupied by two students, range from \$4 to \$15 a month. Unfurnished rooms rent for \$1.50 to \$3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can lessen expenses materially.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the student:

Board	\$120.00 to \$160.00
Room	20.00 to 40.00
Books and stationery	8.00 to 40.00
Laundry	8.00 to 30.00
Matriculation and other fees..	15.00 to 30.00
Incidentals	15.00 to 50.00

Totals	\$186.00 to \$350.00
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The estimated expenses for students in the Medical, Law and Pharmacy schools of the University are included in the second table because of the higher incidental fee.

APPROVED ROOMING PLACES.

By order of the Board of Regents of the University, the Registrar keeps lists of approved rooming places, made up of houses receiving men or women only. *These lists may be had from the Registrar, on application.*

APPROVED ROOMING HOUSES FOR WOMEN.

The University attempts to secure the best housing conditions available for its women students, through a committee under whose direction a list of rooming houses for women only is prepared each year. The sanitary and social conditions of each house are investigated before it is placed on the approved list. This list, together with regulations governing rooming places, may be had from the Registrar after July 1. The committee has an office at the University during registration days.

By action of the Board of Regents, occupancy of rooms by women students shall be subject at all times to the approval of the Committee on Rooming-houses for Women; further, women students are not permitted to lodge in houses in which men also lodge, unless for special reason the rule is waived by the committee.

The following customs have been adopted by the women of the University as organized in the Women's Student Government Association:

I. Rooming houses for women should be closed not later than 10:30 P. M. every night in the week except when entertainments of general interest are held.

II. Students' parties should be held only on Friday or Saturday nights, or on nights preceding holidays, and on holidays.

III. Social engagements should not be made for the evenings of school days, except for Friday evenings, or for evenings preceding holidays, and on holidays.

PART III.

Departments of Instruction.

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1. THE GRADUATE SCHOOL.

The legislative Faculty of the Graduate School consists of professors and associate professors of the department in which graduate courses are offered. The Faculty of instruction includes, in addition to these, assistant professors who are conducting graduate courses.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM HERBERT CARRUTH,[†] PH. D., Vice President, and Professor of Germanic Languages and Literatures.

FRANK WILSON BLACKMAR, PH. D., Dean, and Professor of Sociology and Economics.

JAMES WOODS GREEN, A. M., Professor of Law.

FRANK OLIN MARVIN, A. M., Professor of Engineering.

EDGAR HENRY SUMMERFIELD BAILEY, PH. D., Professor of Chemistry and Metallurgy.

ALEXANDER MARTIN WILCOX, PH. D., Professor of Greek Language and Literature.

LUCIUS ELMER SAYRE, PH. M., Professor of Pharmacy.

LEWIS LINDSAY DYCHE,* M.-S., Professor of Zoölogy.

CHARLES GRAHAM DUNLAP, LITT. D., Professor of English Literature.

CARL ADOLPH PREYER, MUS. D., Professor of Piano.

OLIN TEMPLIN, A. M., Professor of Philosophy.

EDWIN MORTIMER HOPKINS, PH. D., Professor of Rhetoric and English Language.

FRANK HEYWOOD HODDER, PH. M., Professor of American History and Political Science.

ERASMUS HAWORTH, PH. D., Professor of Geology, Mineralogy, and Mining.

ARTHUR TAPPAN WALKER, PH. D., Professor of Latin Language and Literature.

* Absent on leave.

† Resigned.

- WILLIAM CHASE STEVENS, M. S., Professor of Botany.
ARVIN SOLOMON OLIN, A. M., Professor of Education.
WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
WILLIAM LIVESEY BURDICK, LL. B., PH. D., Professor of Law.
CHARLES SANFORD SKILTON, Professor of Musical Theory and Organ.
CHARLES EDWARD HUBACH, Professor of Voice.
JOHN ELOF BOODIN,* PH. D., Professor of Philosophy.
IDA HENRIETTA HYDE, PH. D., Professor of Physiology.
WILLIAM HAMILTON JOHNSON, A. M., Professor of Education.
MARSHALL ALBERT BARBER,* A. M., Professor of Bacteriology and Pathology.
SAMUEL JOHN HUNTER, A. M., Professor of Entomology.
WILLIAM EDWARD HIGGINS, B. S., LL. D., Professor of Law.
CLARENCE ERWIN MCCLUNG,† PH. D., Professor of Zoölogy.
PERLEY F. WALKER, M. M. E., Professor of Mechanical Engineering.
MERVIN TUBMAN SUDLER, PH. D., M. D., Professor of Surgery.
ROBERT KENNEDY DUNCAN, SC. D., Director of Industrial Research.
CARL LOTUS BECKER, PH. D., Professor of European History.
L. D. HAVENHILL, PH. M., Professor of Pharmacy.
FREDERICK EDWARD KESTER, PH. D., Professor of Physics.
GEORGE CARL SHAAD, M. S., Professor of Electrical Engineering.
RICHARD REES PRICE, A. M., Director of University Extension.
CHARLES HUGHES JOHNSTON, PH. D., Professor of Education.
EDNA D. DAY, PH. D., Professor of Home Economics.
HAMILTON P. CADY, PH. D., Professor of Chemistry.
B. J. DALTON, B. C. E., Professor of Railway Engineering and Surveying.
EDWARD J. CURRAN, M. D., D. Ophth., Professor of Anatomy.
THOMAS H. BOUGHTON, M. D., Professor of Bacteriology and Pathology.
HARRY ALVIN MILLIS, PH. D., Professor of Economics.
JOHN SUNDWALL, PH. D., Professor of Anatomy.

* Absent on leave.

† Resigned.

- MILES WILSON STERLING, A. M., Associate Professor of Greek.
 RAPHAEL DORMAN O'LEARY, A. B., Associate Professor of Rhetoric.
 HANNAH OLIVER, A. M., Associate Professor of Latin.
 ELMER FRANKLIN ENGLE, A. M., Associate Professor of German.
 SELDEN LINCOLN WHITCOMB, A. M., Associate Professor of English Literature.
 MARTIN EVERETT RICE, M. S., Associate Professor of Physics and Electrical Engineering.
 JOHN NICHOLAS VAN DER VRIES, PH. D., Associate Professor of Mathematics.
 HERBERT ALLAN RICE, C. E., Associate Professor of Civil Engineering.
 CLINTON MASON YOUNG, E. M., Associate Professor of Mining Engineering.
 RAYMOND ALFRED SCHWEGLER, A. M., Associate Professor of Education.
 FREDERICK HORATIO BILLINGS, PH. D., Associate Professor of Botany and Bacteriology.
 DAVID LESLIE PATTERSON, B. S., Associate Professor of European History.
 HENRY WILBUR HUMBLE, A. M., Associate Professor of Law.
 LOUIS EUGENE SISSON, A. M., Associate Professor of Rhetoric.
 CLARENCE ADDISON DYKSTRA, A. B., Associate Professor of History.
 ARTHUR E. HERTZLER, PH. D., Associate Professor of Surgery.
 WILLIAM KIRK TRIMBLE, M. D., Associate Professor of Clinical Pathology.
 ARTHUR JEROME BOYNTON, A. M., Associate Professor of Economics.
 CHARLES HAMILTON ASHTON, PH. D., Associate Professor of Mathematics.
 ALBERTA L. CORBIN, PH. D., Associate Professor of German.
 CHARLES I. CORP, M. S., Associate Professor of Mechanical Engineering.
 FRANK B. DAINS, PH. D., Associate Professor of Chemistry.
 AUGUSTUS W. TRETTIEN, PH. D., Associate Professor of Education.
 WILSON A. WHITAKER, JR., A. M., Associate Professor of Metallurgy.

ADMINISTRATIVE COMMITTEE.

FRANK W. BLACKMAR, Chairman.

FRANK H. HODDER.

CHARLES G. DUNLAP.

F. E. KESTER.

W. C. STEVENS.

PURPOSES OF THE SCHOOL.

The Graduate School provides all the instruction in advanced subjects offered in the University. It is under the direction of the Faculty and administrative committee of the Graduate School, the Dean of the Graduate School being chairman of the administrative committee.

It was organized in 1896, mainly out of the College of Liberal Arts and Sciences and the School of Engineering, and most of the work offered by the Graduate School is in connection with the several departments of these schools. Courses are also given in pharmacy, law, medical science and education.

It is the business of the Faculty of the Graduate School to formulate courses in graduate work; to establish and maintain the requirements for all higher degrees offered by this University; to make recommendations for those degrees to the Board of Regents; and to fix such regulations as they may deem expedient for the government of the School.

REQUIREMENTS FOR ADMISSION.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing on presentation of proper evidence of scholarship and testimonials of good character.

REGISTRATION.

Students wishing to register should first apply to the Dean of the Graduate School. When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with the student. The student will then submit the courses to the Dean, and if approved, the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the catalogue, and must be designated as graduate on the enrollment card filed in the Registrar's office.

DEGREES GRANTED.

The University offers eight advanced degrees, viz.:

MASTER OF ARTS.	MECHANICAL ENGINEER.
MASTER OF SCIENCE.	MINING ENGINEER.
MASTER OF MUSIC.	CHEMICAL ENGINEER.
DOCTOR OF PHILOSOPHY.	ELECTRICAL ENGINEER.
CIVIL ENGINEER.	

THE REQUIREMENTS FOR THE DEGREES OF MASTER OF ARTS AND MASTER OF SCIENCE.

When the candidate for the master's degree has selected the department in which his major work is to be done the head of that department, in consultation with the candidate, approves his work for the master's degree, which may be confined to the department of the major study or may be selected from that and not more than two other departments. The decision of the head of the department is subject to the veto of the Dean of the Graduate School, but appeal may be made from the decision of the Dean to the Graduate Faculty. The head of the major department approves the courses selected for each semester on a card provided for the same, which is kept on file at the Dean's office. If the student subsequently changes his selection of a major department, the graduate work already done can not be counted toward the master's degree unless approved by the head of the new major department.

The master's degree will be granted only after at least one full year's graduate work. The candidate must have completed with high credit thirty hours of work chosen from the courses open to graduates, published in the catalogue, or approved by the departments concerned and the administrative committee. Courses for which a professional degree is given will not be counted toward this degree. Not more than sixteen hours' credit can be given in one term.

Ordinarily each candidate for the master's degree is required to present a thesis to the head of the major department. The thesis must embody the results of scholarly research on some topic connected with the candidate's major study. The thesis must be completed and given to the head of the department under whose direction it has been done, not later than May 15 preceding the June in which the candidate expects to receive his degree. After examining the thesis, the head of the department shall report its acceptance to the Registrar and deposit the thesis in the office of the Dean of the Graduate School. The thesis must be typewritten and bound in cloth. In special cases, where it seems advisable for the candidate to devote all of his time to regular class work, not involving research, on the recommendation of the head of the department and the consent of the Dean, the requirement of a thesis may be waived.

Ordinarily the candidate for the master's degree is expected to spend a minimum of one year in resident graduate work at some university, the latter half of which at least must be done in residence at the University of Kansas. These regulations permit the acceptance of graduate work done in other institutions to the extent of not more than half of the work, but all credits offered are subject to the decision of the administrative committee. In cases where students have fulfilled the time requirement and have completed all their work within five hours of the amount required they may be permitted to do five hours' work *in absentia*

after obtaining the consent of the Dean and the head of the department in which the work is to be done. The term *in absentia* applies to work not done in colleges and universities. (See exception to the residence rule in regard to Summer Session and Extension.)

SUMMER SESSION AND EXTENSION WORK.

With the consent of the department concerned, a student who has been fully admitted to the Graduate School may be allowed to do as much work *in absentia* as may be necessary to enable him to secure the master's degree by doing five or six hours in each of three Summer Sessions. This privilege will be granted only after the student's work in residence has satisfied the head of the department concerned that the student is able to do the work *in absentia*, and only to such students as have proper facilities (library or laboratory) for doing it. About half of the *in absentia* work must be done between the first and second Summer Sessions of residence, and most of the remainder between the second and third. Not more than five hours may be done after the third Summer Session. The regular requirements as to choice of studies and thesis will be enforced in all cases.

With the consent of the department concerned, students who are candidates for the master's degree may count *in absentia* work done in Extension courses given by members of the University Faculty to the extent of twelve hours, allowing two hours for each course of ten lectures.

ENGINEERING DEGREES.

Graduates in engineering in this University, and masters of science who have received their degrees through the Graduate Faculty, are eligible to the professional degrees of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate course taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

They must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material become the property of the University.

All theses for any professional degree must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

DOCTOR OF PHILOSOPHY.

The degree of doctor of philosophy will be granted on the ground of advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of this University or of some other college or university of good standing; and he must give satisfactory evidence to the Faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university; the last year must be spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination is given before the Faculty of the Graduate School, where the candidate may be required to defend his thesis. This thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done, not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him it is placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If the thesis is finally approved, the candidate must, before receiving the degree, deliver at least 100 printed copies of it to the Librarian of the University, or give proper security for the printing of that number; but if the thesis has already been printed, ten copies only need be deposited with the Librarian.

UNIVERSITY FELLOWSHIPS.

For the encouragement of advanced study and research, the University of Kansas has established seventeen fellowships for graduates of special merit. Each fellowship entitles the holder to \$280. Fellows may be required to give assistance, in the department to which they are assigned, not to exceed three hours of class or six hours of laboratory work per week, and are expected to devote the remainder of their time to investigation and research leading to an advanced degree. These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have dis-

tinguished themselves for special scholarship and marked ability.

For the year 1913-'14 fellowships may be awarded to the best qualified candidates applying in one of the departments enumerated below.

Applications for fellowship must be filed on blanks provided for the same with the Dean of the Graduate School on or before the first day of April of the collegiate year preceding that during which the fellowship is desired. Such applications may be accompanied by recommendations of instructors and by specimens of original work of the applicants, either published or in manuscript.

The applications of the various candidates who are competing for the fellowships are referred to the administrative committee of the Graduate School, which acts as a fellowship committee in consultation with the heads of the departments in which fellowships are granted. The committee, after a consideration of the relative merits of all applicants, nominates the successful candidates and recommends them to the Board of Regents for election. Fellows are elected for a term of one year. However, in special cases, they may be reelected for one additional year only.

TEACHING FELLOWS, 1912-'13.

Maelynette Aldrich.—Greek.
 Elizabeth C. Brook.—American History.
 Carl R. Brown.—Philosophy.
 Georgia J. Cotter.—French.
 Howard E. Curl.—Physiology.
 Floyd B. Danskin.—Economics.
 Jesse R. Derby.—English.
 Marie Hackl.—European History.
 Walter L. Harris.—Education.
 Robert L. Hoffman.—Anatomy.
 Harvey C. Lehman.—German.
 Otto Malleis.—Chemistry.
 Alfred L. Nelson.—Mathematics.
 Patti Sankee.—Latin.
 Edwin C. Schmitt.—Zoölogy.
 Henry W. Thompson.—Sociology.
 Orville T. Wilson.—Botany.

UNIVERSITY FELLOWSHIPS FOR GRADUATES OF KANSAS COLLEGES.

In order to promote advanced study at the University of Kansas, and to encourage the graduates of Kansas colleges and universities to continue their work, the University of Kansas offers one fellowship of \$280 to each of eleven Kansas colleges for the academic year of 1913-'14 and each year thereafter. The colleges to which fellowships are offered for 1913-'14 are: Baker University, Bethany College, Emporia College, Fairmount College, Friends University, Midland College, McPherson College, Ottawa University, Southwest Kansas College, Washburn College, and Campbell College. This list is subject to change each

year by the administrative committee of the Graduate School after consultation with the committee of visitation of colleges.

Candidates for fellowships are to be nominated by the faculties of the respective colleges, from the classes graduating in June before the September when they are to enter upon their fellowships. However, in case there are no satisfactory candidates in the classes referred to, candidates may be nominated from the graduating classes. It is understood that the candidate shall be from among those attaining high scholarship in the respective classes. On or before the first of April of the year in which the fellowship is awarded, the president of the college receiving the fellowship shall send the name of the candidate nominated by the College Faculty or its committee, with a statement of his qualifications, to the Dean of the Graduate School of the University of Kansas.

The candidate's application will be considered by the administrative committee of the Graduate School as in case of other fellowships, and if satisfactory he will be recommended to the Board of Regents for election. A fellow so elected may choose his work, in accordance with the rules of the Graduate School, in any of the departments offering work in the Graduate School.

Each fellow may be called upon to teach or render other equivalent services for not more than two hours per week in the department in which he chooses his major work.

UNIVERSITY FELLOWSHIPS FOR KANSAS COLLEGES, 1912-'13.

Ida Grace Banks.—Campbell College.
Wilson Roy Brown.—Fairmount College.
Martin Burke.—Bethany College.
Elizabeth Campbell.—Washburn College.
Arthur L. Crookham.—Southwestern College.
Alfrede L. Hornor.—Friends University.
Richard V. Howell.—Emporia College.
Fred C. Maage.—Midland College.
R. Chester Roberts.—Ottawa University.
Jacob P. Schroeder.—McPherson College.
Frank Edwin Wood.—Baker University.

FELLOWSHIPS IN INDUSTRIAL RESEARCH.

The University believes that the best training for an industrial chemist is pure chemistry. For this reason it is concerned chiefly with advanced practical research on the part of highly trained men. It will accept from corporations or individuals of business standing and integrity fellowships for the solution of industrial problems of public importance. Professor Duncan, who has the responsibility and direction of these industrial researches, will be glad to furnish to manufacturers involved in manufacturing difficulties details of the course to be followed in placing their problems in the hands of the University for solution. The fellowships in force in 1912-'13 are as follows:

7. The Holophane Fellowship in "The Relation Between the

Optical Properties of Glass and its Chemical Constitution." Fifteen hundred dollars a year for two years. E. Ward Tillotson, Ph. D.

10. The Julius Karpen Fellowship in "An Investigation into the Chemical Treatment of Wood." Fifteen hundred dollars a year for two years. Multiple fellowship: L. V. Redman, A. M., Senior fellow; A. J. Weith, B. S., F. P. Brock, B. S., Junior fellows.

13. "The Utilization of Petroleum in the Manufacture of Soap." Multiple fellowship: F. W. Bushong, Sc. D., senior fellow; I. W. Humphrey, A. B., junior fellow.

14. "The Utilization of Gilsonite." W. E. Vawter, B. S.

15. "The Hardening and Purifying of Cottonseed Oil." Edmund O. Rhodes, B. S.

16. "The Utilization of Leather Waste." R. Phillips Rose, B. S.

17. "Treatment of Low-grade Copper Ores." E. R. Weidlein, A. M.

18. "Treatment of Low-grade Copper Ores," No. 2. Gilbert A. Bragg, B. S.

With nearly all these fellowships there goes a large additional consideration contingent upon success.

GRADUATE CLUB.

Each year the students of the Graduate School organize a club for general social, literary and scientific work. It helps to make the students acquainted with each other as well as acquainted with the nature of each other's work.

DEPARTMENTS.

The following departments offer graduate work in the University. In some of them the facilities are adequate for thorough preparation for the doctor's degree, and in all of them the facilities are excellent for work leading to the master's degree:

Anatomy.

Botany and Bacteriology.

Bacteriology and Pathology.

Chemistry.

Education.

Economics.

English Language and Literature.

Engineering, Civil.

Engineering, Electrical.

Engineering, Mechanical.

Entomology.

Fine Arts.

Geology and Mineralogy.

Germanic Languages and Literatures.

Greek.

History and Political Science.

Home Economics.

Industrial Research.
Latin Language and Literature.
Law.
Mathematics.
Medical Sciences.
Mineralogy (see Geology).
Pharmacy.
Philosophy.
Physics.
Physiology.
Romance Languages and Literatures.
Sociology.
Zoölogy.

DESCRIPTION OF COURSES IN THE GRADUATE SCHOOL.

ANATOMY.

Professor SUNDWALL.
Doctor SMITH.

The following courses may be taken by advanced undergraduates also:

150.—DESCRIPTIVE ANATOMY. Seven hours, first semester, daily, 8 to 12:15. The first two weeks are occupied by a study of osteology. This is intended as an introduction to the study of anatomy. The vertebral column is considered from a morphological standpoint and the various bones studied by means of drawings and modeling. The balance of the term is devoted to dissection of the arm and leg and study of various preparations and models illustrating these parts. Demonstrations to small groups of students are continually going on in the dissecting room. Sundwall and Smith.

151.—DESCRIPTIVE ANATOMY. Eight hours, second semester, daily, 8 to 12:15. During this term the abdomen, thorax and head are carefully dissected and studied, with demonstrations as in No. 150. This is a continuation of course 150. Sundwall and Smith.

152.—NEUROLOGY AND SENSE ORGANS. Four hours, second half of second semester, daily, 8 to 12:15. This is a study of the gross anatomy of the cord and brain by means of dissections, models and slides. The latter are stained by the Weigert method, and are demonstrated by the microscope and lantern. The various nuclei of the cranial nerves and the most important tracts of the cord and brain are considered, both from anatomical and physiological points of view. Sundwall.

103.—ADVANCED ANATOMY. Opportunities are afforded to physicians and advanced students desirous of doing special work and research in the anatomical sciences. Sundwall.

104.—SEMINAR. A limited number of students can by special arrangements be admitted to a seminar in which subjects of current interest in the anatomical sciences will be discussed. Prerequisites, general anatomy, reading knowledge of French and German. Sundwall.

BACTERIOLOGY AND PATHOLOGY.

Professor BOUGHTON.
Mr. CURL.

150.—MEDICAL BACTERIOLOGY. Five hours, first semester, 1:30 to 3:30. In this course the student learns the methods of preparing culture media and of studying bacteria, and acquires proficiency in bacteriological technique. The more common disease-producing bacteria are studied with reference to their morphologic and cultural characteristics. Boughton and Curl.

101.—ADVANCED BACTERIOLOGY. Includes the more difficult technical procedures, and research work. By appointment. Boughton.

102.—PATHOLOGY. Research work in all branches of pathology and immunology. By appointment. Boughton.

BOTANY AND BACTERIOLOGY.

Professor STEVENS.
Associate Professor BILLINGS.
Assistant Professor SHULL.
Dr. CHARLES, Instructor.
Mr. SHERWOOD, Instructor.
Mr. CLAWSON, Instructor.

Botany.

100.—MORPHOLOGY AND PHYSIOLOGY OF THE PLANT CELL. Five or ten hours, first or second semester, or both semesters, by appointment. A study of cell characters, adaptation to specific functions, and behavior under varying environments; nuclear and cell divisions; reproduction. Stevens.

101.—PLANT ECOLOGY. Three hours, five hours, or ten hours, throughout the year, by appointment. The relation of plants to their environment. Field work and reading. Warming's, Schimper's, Clements' and Cows' texts and current literature. Stevens.

102.—RESEARCH IN PLANT HISTOLOGY. Both semesters, by appointment. Stevens.

103.—RESEARCH IN PLANT PHYSIOLOGY. Both semesters, by appointment. Open only to graduate students specializing in plant physiology, and who expect to take advanced degrees in the department with physiology as the major subject. Registration only after consultation. Shull.

104.—BOTANICAL CONFERENCE. One hour, by appointment. Review and discussion of current botanical work. Reports on assigned subjects.

The following courses are open to advanced undergraduates also:

150.—TAXONOMY OF SPERMATOPHYTES. Five hours, first semester, 8 to 10. Charles.

152.—PLANT BREEDING. Five hours, second semester, 8 to 10. Shull.

153.—PLANT PHYSICS. Five hours, first semester, 1:30 to 3:30. Shull.

154.—PLANT CHEMICS. Five hours, second semester, 1:30 to 3:30. Shull.

155.—MORPHOLOGY OF THALLOPHYTES. Three hours or five hours, second semester, by appointment. Charles.

156.—MORPHOLOGY OF FUNGI. Three hours, first semester, 10:15 to 12:15. Charles.

157.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three hours, both semesters, by appointment. Charles.

158.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours, first or second semester, or both, by appointment. Stevens.

159.—ORGANIC EVOLUTION. Three hours, first semester, at 9. Stevens and Robertson.

160.—TEACHERS' COURSE IN BOTANY. Five hours, second semester, 4:30 to 5:30. Stevens.

Bacteriology.

100.—GENERAL PROBLEMS IN BACTERIOLOGY. Five hours, either semester, 10:15 to 12:15. Laboratory work, with lectures, recitations and special readings. Billings and Clawson.

101.—RESEARCH IN BACTERIOLOGY. Three, five, or ten hours, by appointment. Graduates taking this course must satisfy the instructor in charge that they are able to carry on original investigation in the special field selected. Billings.

The following courses are open to undergraduates also. For description, see The College.

150.—BACTERIOLOGY OF MILK AND OF WATER. Five hours, second semester, 8 to 10. Clawson.

151.—SPECIAL METHODS IN BACTERIOLOGY AND SEROLOGY. Three hours, first semester, 1:30 to 3:30. Sherwood.

152.—MICROBIOLOGY AND PUBLIC HEALTH. One hour, second semester, Tuesday, at 9. Billings.

153.—WATER ANALYSIS. Five hours, either semester, 8 to 10. Open to graduates who have had chemistry 3.

154.—JOURNALS. One hour, Mondays, at 3:30.

155.—PROBLEMS. Three, five, or ten hours, by appointment.

CHEMISTRY.

Professor BAILEY.

Professor CADY.

Associate Professor DAINS.

Associate Professor WHITAKER.

Assistant Professor ALLEN.

Assistant Professor YOUNG.

PREREQUISITES. Students who expect to take a graduate major in chemistry must present not less than the substantial equivalent of our undergraduate courses 1, 2, 3, 4 and 54 before beginning their graduate work.

100.—HISTORY OF CHEMISTRY. Three hours, second semester, by appointment. A course in history of chemistry and the development of chemical theories. Recitations, library work, and the presentation of reports. Offered in 1912-'13 and alternate years thereafter. Dains.

101.—ANALYTICAL CHEMISTRY. Five hours, either semester, by appointment. A research course. This may include the investigation of some problems in metallurgical or manufacturing processes, the complete investigation of some proposed water supply, the development of new methods in analytical chemistry, or a study and comparison of methods already in use. Bailey.

102.—ORGANIC CHEMISTRY. Five hours, either semester, by appointment. A research course. This course offers, to those who have proper preparation, a chance for more extended study and original investigation. Dains.

103.—PHYSICAL CHEMISTRY. Five hours, either semester, by appointment. A research course extending over two or more semesters. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this branch of chemistry. Cady.

104.—ORGANIC PREPARATIONS (advanced). Five hours, either semester, by appointment. Must be preceded by course 60 (College) or its equivalent. A study of organic synthetical methods and ultimate organic analyses. Dains.

105.—ELECTROCHEMISTRY. Five hours, second semester, by appointment. A laboratory course on the reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. Must be preceded by course 64 (College). Cady.

106.—CHEMICAL STATICS AND DYNAMICS. Three hours, second semester, by appointment. A study of the manner in which chemical reactions take place, and the equilibria which result, from the standpoint of reaction velocities. Prerequisites, general physics, calculus, physical chemistry 164 or 165, and organic chemistry. Cady.

107.—THE PHASE LAW. Two hours, second semester, by appointment. A study of chemical equilibria from the standpoint of the phase law of Gibbs. Prerequisite, course 165. Cady.

108.—GAS ANALYSIS. Two hours, first semester, by appointment. A laboratory course. Gill's or Hempel's Gas Analysis. Prerequisite, course 54 (College). Allen.

110.—ELECTROLYTIC ESTIMATION OF METALS. Two hours, second semester, by appointment. A laboratory course. Prerequisite, course 54 (College). Allen.

111.—SUGAR ANALYSIS. Two hours, by appointment. Jackson.

The following course may be taken by undergraduates also. For description, see The College.

155.—QUANTITATIVE ANALYSIS. Two, three or five hours, either semester. Allen.

156.—WATER ANALYSIS. Three hours, second semester, by appointment. Young.

157.—ASSAYING AND METALLURGICAL ANALYSIS. Five hours, second semester, 3:30 to 5:30, and by appointment. Whitaker.

158.—FOOD ANALYSIS. Four hours, either semester, by appointment. Jackson.

160.—ORGANIC CHEMISTRY II. Five hours, second semester, 3:30 to 5:30. Dains.

161.—METALLURGY I. Three hours, first semester, at 9. Whitaker.

162.—METALLURGY II. Three hours, second semester, at 9. Whitaker.

163.—METALLURGICAL LABORATORY. Two hours, first semester. Whitaker.

164.—PHYSICAL CHEMISTRY. Five hours, first semester, at 10:15. Cady.

165.—PHYSICAL CHEMISTRY. Five hours, second semester, at 10:15. Cady.

190.—TEACHERS' COURSE IN CHEMISTRY. Four hours, second semester, by appointment. Bailey.

170.—METALLOGRAPHY. This course covers the general principles of metallography as applied to iron, steel and other alloys. It includes a study of the typical micro-structures, their interpretation as applied to annealing, tempering and hardening, and the general theories of heat treatment. Laboratory work and conferences. Two hours. Whitaker.

171.—ADVANCED ORGANIC CHEMISTRY. Special topics in advanced organic chemistry. Two hours, first semester. Dains.

ECONOMICS.

Professor MILLIS.

Associate Professor BOYNTON.

Assistant Professor PUTNAM.

Assistant Professor ———.

100.—SEMINAR. Two to ten hours, either semester, by appointment. This is a research course for mature students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the personal direction of one of the instructors.

101.—ECONOMIC RESOURCES AND ACTIVITIES OF EUROPEAN COUNTRIES. Two hours. A study of the natural resources of industrial nations and their present economic life and activity. The present condition of agriculture, mining, manufacturing, and industry in general, together with the internal trade and foreign commerce of each country, will be investigated, and the governmental policies designed to encourage industry and trade

will also be a feature of the course. Boynton. (Not given in 1913-'14.)

The following courses may be taken by undergraduates and graduates:

150.—MONEY AND CREDIT. Three hours, first semester, at 9. Boynton.

151.—BANKING. Three hours, second semester, at 9. Boynton.

152.—INVESTMENTS. Two hours, second semester, at 11:15. Boynton.

153.—ACCOUNTING. Two hours, first semester, at 8.

154.—BUSINESS ORGANIZATION AND MANAGEMENT. Two hours. (Not given in 1913-'14.)

155.—HISTORY AND DEVELOPMENT OF TRANSPORTATION. Two hours, first semester, at 11:15. Boynton. (Not given in 1913-'14.)

156.—RAILWAY RATES AND GOVERNMENT REGULATION. Three hours, first semester, at 11:15. Boynton.

157.—CORPORATION ECONOMICS. Two hours, first semester, at 10:15. Putnam.

158.—CORPORATION FINANCE. Two hours, second semester, at 10:15. Putnam.

159.—INSURANCE. Two hours, first semester, at 9. Putnam.

160.—PUBLIC FINANCE. Three hours, first semester, at 8. Millis.

161.—AMERICAN METHODS OF TAXATION. Three hours, second semester, at 8. Millis.

162.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours, first semester, at 10:15. Millis.

170.—LABOR PROBLEMS: TRADE-UNIONS. Three hours, first semester, at 9. Millis.

171.—LABOR PROBLEMS: THE STATE IN RELATION TO LABOR. Three hours, second semester, at 9. Millis.

172.—IMMIGRATION PROBLEM. Two hours. Millis. (Not given in 1913-'14.)

173.—STATISTICS. Two hours, second semester, at 11:15.

180.—ECONOMICS OF AGRICULTURE. Two hours, second semester, at 9. Putnam.

191.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH. Two hours, first semester, at 8. Millis.

192.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH. Two hours, second semester, at 8. A continuation of course 191. Millis.

193.—ECONOMIC THEORY, TO ADAM SMITH. Two hours, first semester, by appointment. Boynton.

194.—ECONOMIC THEORY, SINCE ADAM SMITH. Two hours, second semester, by appointment. Boynton.

EDUCATION.

Professor JOHNSTON.

Professor OLIN.

Associate Professor SCHWEGLER.

Assistant Professor JOSSELYN.

Assistant Professor TRETTIEN.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Three to five hours, both semesters. Johnston. By appointment.

101.—SEMINAR IN ABNORMAL PSYCHOSES. Two or three hours, both semesters, hours by appointment. Schwegler.

102.—SEMINAR, HERBERT AND FROEBEL. Two hours, first semester. Olin. By appointment.

103.—SEMINAR, DEVELOPMENT OF UNIVERSITIES. Two hours, second semester. Olin. By appointment.

104.—SEMINAR, EDUCATIONAL STATISTICS. Two to four hours, both semesters. Josselyn. By appointment.

The following courses are open to undergraduates and graduates. For description, see School of Education.

159.—EDUCATIONAL CLASSICS. Two hours, first semester, at 10:15. Olin.

160.—EDUCATIONAL CLASSICS. Two hours, second semester, at 9. Olin.

163.—EDUCATION IN AMERICA. Three hours, second semester, at 9. Olin.

164.—EDUCATIONAL PSYCHOLOGY. Three hours, both semesters, at 9 and 2:30. Johnston and Josselyn.

165.—GENETIC PSYCHOLOGY. Two hours, first semester, at 11:15. Schwegler.

171.—EDUCATIONAL PATHOLOGY. Two hours, first semester, 10:15. Schwegler.

167.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours, second semester, at 10:15. Johnston and Josselyn.

168.—PHILOSOPHY OF EDUCATION. Three hours, first semester, at 3:30. Trettien.

166.—EXPERIMENTAL EDUCATION. Two hours, second semester, at 9. Josselyn.

156.—VOCATIONAL EDUCATION. Two hours, first semester, at 9. Josselyn.

153.—SOCIAL EDUCATION. Two hours, second semester, at 8. Josselyn.

172.—ELEMENTARY EDUCATION. Three hours, first semester, at 8. Josselyn.

173.—SUPERVISION OF INSTRUCTION IN ELEMENTARY SCHOOLS. Two hours, first semester, at 8. Josselyn.

174.—ADMINISTRATION OF PUBLIC EDUCATION. Three hours, second semester, at 8. Josselyn.

161.—SECONDARY EDUCATION. Three hours, second semester, at 11:15. Johnston.

158.—COMPARATIVE STUDY OF EDUCATIONAL SYSTEMS. Three hours, first semester, at 9. Olin.

155.—MENTAL MEASUREMENTS. Two hours, second semester. Schwegler.

169.—TECHNIQUE OF TEACHING. Two hours, both semesters, at 3:30. Trettien.

177.—PRACTICAL PROBLEMS. Credit to be arranged, both semesters, Saturday morning, at 10. Trettien.

157.—SCHOOL HYGIENE. Three hours, second semester, at 3:30. Trettien.

170.—THE EDUCATION OF FEELING AND ATTENTION. Second semester, hours to be arranged. Johnston. (Omitted in 1912-'13.)

178.—ADOLESCENCE. Two hours, second semester, at 11:15. Schwegler.

TEACHERS' COURSES IN SPECIAL SUBJECTS.

Graduate credit is not given to practice teaching.

185.—TEACHERS' COURSE IN GERMAN. Three hours, second semester. Carruth and Corbin.

186.—TEACHERS' COURSE IN ENGLISH. Three hours, first semester, at 2:30. Hopkins.

187.—TEACHERS' COURSE IN LATIN. Two hours, first semester, at 10:15. Walker.

188.—TEACHERS' COURSE IN FRENCH. Three hours, second semester, at 10:15. Galloo.

189.—TEACHERS' COURSE IN MATHEMATICS. Three hours, second semester, at 10:15. Mitchell.

190.—TEACHERS' COURSE IN CHEMISTRY. Two hours, second semester. Bailey and the instructor in charge of the elementary course.

191.—TEACHERS' COURSE IN HISTORY. Two hours, second semester, at 2:30. Becker.

192.—TEACHERS' COURSE IN BOTANY. Three hours, second semester, at 8 or 10. Stevens.

193.—TEACHERS' COURSE IN ENTOMOLOGY. Three hours, second semester, 3:30 to 5:30. Hunter.

180.—TEACHERS' COURSE IN PHYSICS. Three hours, second semester, at 4:30. Stimpson.

181.—TEACHERS' COURSE IN PHYSIOLOGY. Three hours, second semester, at 2:30. Hyde.

182.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours, second semester, at 9. Haworth.

183.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours, second semester. Day.

198.—TEACHERS' COURSE IN ZOÖLOGY. Three hours, second semester, at 8. Baumgartner.

ENGINEERING—CIVIL.

Dean MARVIN.
Professor BEGG.
Professor DALTON.
Associate Professor H. A. RICE.
Assistant Professor GARDNER.

Equipment.—See General Catalogue.

100.—STRUCTURAL DESIGNING. Five credit hours, first or second semester, by appointment. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, standpipes, and elevated tanks. This course is designed to follow course 15. Lectures, recitations, and detail designing in the drawing room. Rice.

101.—RESEARCH COURSE. A course of investigation of some matter directly related to civil engineering. This course should run through the year, making ten hours' credit. Arrangements for the course should be made with Dean Marvin.

162.—BRIDGE DESIGNING. Five hours, second semester, daily, 1:30 to 3:30. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 14. Rice.

163.—ENGINEERING MATERIALS. Five hours, second semester, by appointment. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library and laboratory work. Rice.

164.—SANITARY ENGINEERING. Five hours, second semester, by appointment. An advanced course. Prerequisites, courses in water supply and sewerage. A general study of public sanitation, particularly with reference to the water-borne infectious diseases. A study of engineering works for the protection of the public health. Influence of good sewerage, drainage and water supply upon the health of communities. Visits to sanitary engineering works. State control of public water supplies and pollution of streams. Lectures, recitations and reading. Begg.

165.—REINFORCED CONCRETE. Three hours, second semester, daily, at 9. Rice.

166.—MAINTENANCE OF WAY. Five hours, second semester, daily, at 10:15. An advanced course in railway engineering. Dalton.

168.—HYDRAULICS. Three hours, first semester, at 10:25. A study of the laws governing the pressure and flow of liquids. Calculation of the discharge over weirs and through pipes. Principles and types of hydraulic and pumping machinery. Begg.

ENGINEERING—ELECTRICAL.

Professor SHAAD.

Assistant Professor JOHNSON.

100.—POWER TRANSMISSION AND ELECTRIC RAILWAYS. An advanced course in these subjects, consisting of lectures, assigned readings, and problems, special attention being paid to the engineering features of long-distance power transmission and the electrification of trunk line railways. Second semester, four hours, by appointment. Shaad.

The following courses may be taken by advanced undergraduates also. (See School of Engineering.)

157.—ELECTRIC LIGHTING. Second semester, three hours, at 11:15. Johnson.

158.—ELECTRIC POWER TRANSMISSION. Second semester, five hours, at 10:15. Shaad.

162.—ELECTRICAL ENGINEERING PRACTICE. Second semester, three hours, Monday, Wednesday, and Friday, at 9. Shaad.

163.—ADVANCED ELECTRICAL LABORATORY. Second semester, five hours, at 1:30. Johnson.

ENGINEERING—MECHANICAL.

Professor WALKER.

100.—ADVANCED ENGINEERING LABORATORY. Research work in some line connected with power development, fuel, lubrication or refrigeration, as may be selected in consultation with the instructor. Both semesters, five hours, as assigned. Walker.

101.—ADVANCED DESIGNING. The course calls for a complete design in all details of some machine or of a plant for manufacturing or power development purposes. Water-power, steam and gas machinery, and systems of power transmission are given particular attention. Five hours, both semesters, as assigned. Walker.

102.—RESEARCH COURSE. Five hours, each semester, by appointment. A full presentation of some engineering subject to be selected in consultation with the instructor in charge. It may be a subject which is being treated in course 100 or 101. Walker.

The following undergraduate courses, described in the Engineering School catalogue, may be taken for credit by graduates, when accompanied by additional reading and reports:

151.—THERMODYNAMICS. First semester, four hours, at 11:15. Walker.

169.—SHOP ADMINISTRATION. Second semester, two hours at ——. Walker.

170.—WORKS MANAGEMENT. Second semester, two hours, at 9. Walker.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
 Professor HOPKINS.
 Associate Professor O'LEARY.
 Associate Professor WHITCOMB.
 Associate Professor SISSON.
 Assistant Professor LYNN.
 Assistant Professor GRAY.
 Assistant Professor JOHNSON.
 Assistant Professor CROISSANT.

102.—THE ELIZABETHAN DRAMA, exclusive of Shakspeare. Three hours, second semester, Monday, Wednesday, and Friday, at 11:15. Special attention to Marlowe, Ben Johnson, and Beaumont and Fletcher. Lectures on the dramatic history of the period, and reading of about twenty plays. Gray.

103.—ENGLISH LITERATURE AS INFLUENCED BY OTHER LITERATURES. Three hours, second semester, by appointment. An introductory review of the subject, followed by detail study of a selected topic. Whitcomb.

106.—ENGLISH PROSE OF THE EIGHTEENTH CENTURY. Three hours, first semester, Monday, Wednesday, and Friday, at 9. The authors studied will be Swift, Addison, Steele, Johnson, Goldsmith, and Burke. Lectures, library work, and the preparation of a thesis. O'Leary.

107.—HISTORY OF ENGLISH CRITICISM. Two hours, second semester, by appointment. This course will be devoted to the general development of English criticism, or to some specialized field, according to the preparation and needs of the class. Whitcomb.

108.—LATER NINETEENTH CENTURY VERSE. Two hours, second semester, by appointment. Special study of poetry of Arnold, Fitzgerald, Clough, Swinburne, the Rossettis and William Morris. A brief survey of the minor poets of the period and of contemporary verse. Johnson.

109.—HISTORY OF THE LITERATURE AND THE TEACHING OF RHETORIC IN ENGLISH. Two hours, first semester, Tuesday and Thursday, at 10:15. Lectures, library reading, and the preparation of a thesis. O'Leary.

110.—ENGLISH PROSODY. One hour, second semester, by appointment. The history of English verse and verse forms. Hopkins.

111.—EPIC POETRY. Three hours, first semester, by appointment. Study of the form and subject matter of the epic, and of the general place of epic poetry in the history of English literature. Whitcomb.

112.—SEMINAR. Three hours, first semester, by appointment. Designed to train students in methods of investigation. The subject for 1913-'14 is "The Relation of Elizabethan Drama to the Court." Gray.

113.—SEMINAR. Three hours, second semester, by appointment. The subject for 1914 is "English Criticism of Prose Fiction from Defoe to Scott." Whitcomb.

114.—HISTORY OF THE ENGLISH LANGUAGE. Three hours, second semester. After a study of the general principles of linguistic change, and some study of Old English as a Germanic dialect, the development of the sounds, inflections and syntax of English will be traced from old to modern times. Elementary Old English and a reading knowledge of German are prerequisite. Croissant.

115 and 116.—SEMINAR. Three to five hours' credit, both semesters, by appointment. Individual research. In this course a properly qualified student may investigate an approved subject, under the guidance of an instructor in whose special field the subject lies. Designed in part for students preparing theses for the master's degree.

The following courses are open to advanced undergraduates also. For description, see The College.

153.—ARGUMENT. Three hours, second semester, at 2:30. Hopkins.

155.—LITERARY CRITICISM. Two hours, first semester, at 1:30. Hopkins.

156.—VERSIFICATION. One hour, first semester, at 3:30. Hopkins.

157.—ESSAY WRITING. Two hours, second semester, at 10:15. O'Leary.

158.—PROSE INVENTION. Two hours, second semester, at 1:30. Hopkins.

160.—ELEMENTARY OLD ENGLISH. (Anglo-Saxon.) Three hours, first semester, at 3:30. Croissant.

161.—ELEMENTARY OLD ENGLISH. Two hours, second semester, at 3:30. Croissant.

162.—MIDDLE ENGLISH. Two hours, second semester, at 2:30. Croissant.

163.—MIDDLE ENGLISH. Two hours, second semester, at 3:30. Croissant.

164.—ADVANCED OLD ENGLISH. Three hours, first semester, at 1:30. Croissant.

165.—ENGLISH METRICAL ROMANCES. Two hours, second semester, at 2:30. Croissant.

169.—METHODS OF TEACHING ENGLISH. Three hours, by appointment. (See course 186, School of Education.) Hopkins.

171.—AMERICAN LITERATURE. Three hours, first semester, at 1:30. Hopkins.

172.—AMERICAN LITERATURE. Three hours, second semester, at 1:30. Hopkins.

173.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours, first semester, at 9. O'Leary.

174.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours, second semester, at 9. O'Leary.

175.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours, first semester, at 10:15. Dunlap.

176.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester, at 11:15. Dunlap.

177.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester, at 9. Dunlap.

178.—SHAKSPEARE. Three hours, both semesters, at 10:15. Dunlap.

179.—CHAUCER. Three hours, first semester, at 9. Dunlap.

180.—SHELLEY AND KEATS. Two hours, second semester, at 11:15. Dunlap.

181.—BROWNING AND TENNYSON. Three hours, at 8. Lynn.

182.—CARLYLE AND EMERSON. Three hours, second semester, at 2:30. Johnson.

183.—MILTON AND HIS CONTEMPORARIES. Two hours, second semester, at 2:30. (Not given in 1915.) Johnson.

184.—THE MODERN ENGLISH LYRIC. Two hours, first semester, at 3:30. Whitcomb.

185.—THEORY OF THE DRAMA AS A FORM OF ART. First semester, at 3:30. Whitcomb.

186.—HISTORY OF THE ENGLISH DRAMA. Three hours, first semester, at 2:30. Johnson.

187.—HISTORY OF THE ENGLISH DRAMA. Two hours, second semester, at 2:30. Whitcomb.

188.—THE ENGLISH NOVEL. Three hours, second semester, at 11:15. Dunlap.

189.—THE ENGLISH ESSAY. Two hours, second semester, at 9. O'Leary.

190.—THE DEVELOPMENT OF ENGLISH PROSE. Three hours, first semester, at 11:15. Sisson.

ENTOMOLOGY.

Professor HUNTER.
Mr. HUNGERFORD, Instructor.

100.—ORIGINAL INVESTIGATION. Five hours, throughout the year, by appointment. Experimental work in parthenogenesis. Hunter.

101.—FIELD ENTOMOLOGY, BIOLOGICAL SURVEY. Five hours, throughout the year, including the Summer Session, by appointment. The department of entomology has already completed a survey of insect life in twenty-seven counties in the western part of the state. This work will be resumed at the opening of the Summer Session and the party will remain in camp until the first week in September. This course consists of a taxonomic study of all existing forms, extended investigations in their life histories, and relations to environments. This course will afford an opportunity to several properly prepared students or teachers

in the state who are interested in these problems to join the expedition and continue their work. Arrangements may be made whereby these investigators may obtain representatives from the duplicate material taken to add to their own collections or those of the institutions with which they are connected. The head of the department invites correspondence from those desiring appointments on this survey. Hunter.

102.—MORPHOLOGICAL DEVELOPMENT. Five hours, throughout the year, by appointment. Problems assigned with reference to the attainments of individual students. Hunter.

103.—ORCHARD LIFE AND FOREST LIFE. Five hours, throughout the year, including the Summer Session, by appointment. The head of the department, as state entomologist, in connection with the State Entomological Commission, is conducting a comprehensive and detailed survey of the insect life as it pertains to the orchards and forestry of the state. In this work special attention is given to statistical methods and detailed illustrations of distribution by means of maps and charts. Arrangements have been made whereby a very limited number of well-prepared students may receive appointments for credit on this work. Hunter.

104.—CONFERENCE. One hour, throughout the year, by appointment. This course affords an opportunity for the presentation and discussion of current research in this branch of science. During the present year the subject for consideration is the influence of chemical and climatic stimuli upon developing forms.

NOTE.—Students should have a reading knowledge of French and German before taking up these courses.

The following courses are open to undergraduates and graduates. See The College.

150.—GENERAL ENTOMOLOGY. Three hours, first semester, Monday, Wednesday, and Friday, 1:30 to 3:30. Hunter and Hungerford.

151.—GENERAL ENTOMOLOGY. Three hours, second semester, Monday, Wednesday, and Friday, 10:15 to 12:15. Hunter and Hungerford.

152.—SYSTEMATIC ENTOMOLOGY I. Two hours, first semester, Tuesday and Thursday, 1:30 to 3:30. Hungerford.

153.—SYSTEMATIC ENTOMOLOGY II. Two hours, second semester, Tuesday and Thursday, 10:15 to 12:15. Hungerford.

154.—MORPHOLOGY. Five hours, throughout the year, by appointment. Hunter.

155.—TAXONOMY. Five hours, throughout the year, by appointment. Hunter.

156.—APPLIED ENTOMOLOGY. Two hours, first semester, Tuesday and Thursday, at 10:15. Hungerford.

157.—HOME ECONOMIC ENTOMOLOGY. Two hours, second semester, 3:30 to 5:30. Hungerford.

158.—INSECTS AND DISEASE. Two hours, second semester, Tuesday and Thursday, 10:15. Hunter.

159.—TEACHERS' COURSE. Three hours, second semester, 3:30 to 5:30. Hunter and Hungerford.

FINE ARTS.

Professor SKILTON.

Professor PREYER.

Professor HUBACH.

Professor GRIFFITH.

PIANO. Five hours, each semester, by appointment. Etudes of Phillipp, Liszt, MacDowell and others; transcriptions of Bach's organ fugues by Liszt, Tausig, Busoni; modern concert pieces and concertos. Open only to graduates of the artists' course or of other schools requiring a corresponding amount of work. Applicants must play before the Fine Arts Faculty not less than three concert numbers, including a movement of a sonata or concerto, and give a public recital on completion of the course. Preyer.

ORGAN. Five hours, each semester, by appointment. Greater preludes and fugues and chorale preludes of Bach, of modern German, French, English and American masters. Oratorio accompaniment and playing with orchestra. This course is subject to the same conditions as Piano. Skilton.

OPERA AND ORATORIO. Five hours, by appointment. Practical and critical study of the development of opera and oratorio, the practical work consisting of one hour a week of vocal study of selected numbers; the theoretical work of two hours' critical examination of complete works. Open only to graduates of the voice department or of other schools requiring a corresponding amount of work. Applicants must sing before the Music Faculty not less than three concert numbers, including an aria, and give a public recital on completion of the course. Hubach and Skilton.

COMPOSITION. Five hours, by appointment. Original composition in large forms, suite sonata, overture, cantata, concerto. Open to graduates of the music department or of other schools requiring a corresponding amount of work. Applicants must present original compositions in the smaller forms which show evidences of talent and mastery of material. Preyer or Skilton.

DESIGN. Five hours, each semester. Advanced designing, calling for the completion of an original painting containing not less than three figures. Shortest dimension of the canvass to be not less than three feet. Open to graduates of the School of Fine Arts or of other schools of equal standing. Griffith.

GEOLOGY AND MINERALOGY.

Professor HAWORTH.

Assistant Professor TODD.

Assistant Professor TWENHOFEL.

100.—DYNAMIC GEOLOGY. Each semester, five hours, by appointment. This will be a continuation of geology 56 in the College, which see. Opportunity is offered for students to

elect dynamic geology either for a major or minor for the degree of master of arts or doctor of philosophy. Haworth.

101.—PHYSIOGRAPHY. Each semester, five hours, by appointment. This will be a continuation of geology 54 in the College, which see. It should be preceded by or accompanied by geology 55 and 56 in the College. Opportunity is afforded for students to elect physiography either for a major or a minor for the degree of master of arts or doctor of philosophy. Haworth.

102.—ECONOMIC GEOLOGY. First semester, five hours, by appointment. A comprehensive study of the metallic wealth of the world, including the geography and geology of ore deposits, methods of mining the ores and their commercial importance, following geology 52 in the College. Students so desiring may continue this study two or more terms and make it a major or minor for the degree of master of arts and in part a major for the degree of doctor of philosophy. Haworth.

103.—ECONOMIC GEOLOGY. Second semester, five hours, by appointment. A comprehensive study of the nonmetallic mineral wealth of the world, following geology 53 in the College. Students so desiring may pursue this study for two or more terms, and may offer it as a major or minor for the degree of master of arts or in part a major for the degree of doctor of philosophy. Haworth.

A student electing one of the above subjects as a major for the degree of doctor of philosophy must devote at least half his time to it for three years, and must present a dissertation embodying the results of original work done in connection therewith, in accordance with the general conditions governing the granting of this degree by this University and with the requirements of the department of geology.

Graduate students who have not had the prerequisites, as shown above, may take such studies in the College, but will be expected to do more work in them than undergraduate students in the same classes.

104.—SUMMER FIELD WORK. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Haworth.

The following courses may also be taken by graduate students who have not had them nor their equivalent:

150 and 151.—AREAL GEOLOGY I AND II. (College 50 and 51, which see for detailed description.)

152 and 153.—ECONOMIC GEOLOGY I AND II. (College 52 and 53, which see for detailed description.)

155 and 156.—DYNAMIC GEOLOGY I AND II. (College 55 and 56, which see for detailed description.)

157 and 158.—INVERTEBRATE PALEONTOLOGY. (College 57 and 58, which see for detailed description.)

Mineralogy.

105.—ADVANCED WORK AND ORIGINAL WORK IN MINERALOGY. Three, five or ten hours, throughout the year, by appointment. This course may be chosen by graduate students who have completed courses 1, 50 and 51 in the College and who wish to specialize in the subject of mineralogy. Haworth and Todd.

106.—ADVANCED WORK AND ORIGINAL WORK IN PETROGRAPHY. Three, five or ten hours, throughout the year, by appointment. This course may be chosen by graduate students who have completed courses 51, 52 and 53 in the College, and who wish to specialize in the subject of petrography. Haworth.

The following courses may also be taken by graduate students who have not had them nor their equivalent:

161.—SYSTEMATIC MINERALOGY. (College 61, which see for detailed description.)

162 and 163.—PETROGRAPHY. (College 62 and 63, which see for detailed description.)

164.—VULCANISM AND METAMORPHISM. (College 64, which see for detailed description.)

GERMANIC LANGUAGES AND LITERATURES.

Professor CARRUTH.
Associate Professor ENGEL.
Associate Professor CORBIN.
Assistant Professor KRUSE.
Assistant Professor STURTEVANT.

100.—HISTORY OF THE GERMAN LANGUAGE. Two hours, first semester, Tuesday and Thursday, at 11:15. Introduction to philological study. Behagel, *Die Deutsche Sprache*; Kluge's *Vorgeschichte der altgermanischen Dialekte*, Brenner's *M. H. D. Grammatik*. Lectures and library work. Carruth.

101.—GOTHIC. Three hours, first semester, Monday, Wednesday, and Friday, at 1:30. Braune's *Gothic Grammar*; Heyne's *Ulflas*. Phonetics, grammar, and translation. Carruth.

102.—OLD NORSE. Three hours, first semester, and two hours, second semester, by appointment. Noreen's *Altnordische Grammatik*; Holthausen's *Altisländisches Lesebuch*; *The Elder Edda*. Sturtevant.

103.—MIDDLE HIGH GERMAN. Two hours, first semester, three hours, second semester, by appointment. Paul's *Mittelhochdeutsche Grammatik*. *Nibelungenlied*. Hartmann, *Der arme Heinrich*. Selections from Walther von der Vogelweide. Lectures. Engel.

104.—LUTHER AND THE SIXTEENTH CENTURY. Three hours, second semester, by appointment. Reading and grammatical study of the German literature of the Reformation, preceded by an outline of historical German grammar. Carruth.

105.—GERMANIC MYTHOLOGY. Two hours, second semester, at 1:30. Mogk's *Deutsche Mythologie*. Carruth.

106.—MODERN NORWEGIAN. Two hours, first semester, and three hours, second semester, by appointment. Olsen's Grammar and Reader, and selected texts. Sturtevant.

107.—OLD HIGH GERMAN. Three hours, first semester, by appointment. Braun's *Athochdeutsche Grammatik und Lesebuch*. Sturtevant.

108.—OLD SAXON. Two hours, second semester. Sturtevant.

109.—THEME WRITING. Independent composition in German, journal reports, abstracts, etc. Two hours, second semester, by appointment. Carruth and Kruse.

The following courses may be taken by advanced undergraduates also. For description, see The College.

150.—GERMAN LITERATURE. Three hours, first semester, at 10:15. Carruth.

151.—GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. Three hours, second semester, at 10:15. Carruth.

152.—HISTORY OF GERMAN PROSE FICTION. Three hours, second semester, at 10:15. Carruth. (Alternating with 151.)

153.—THE LYRICS OF GOETHE. Two hours, first semester, by appointment. Corbin.

154.—THE ROMANTIC LYRIC. Continuation of 153. Three hours, second semester, at 8. Corbin.

155.—THE REALISTIC DRAMA. Three hours, first semester, at 8. Kruse.

156.—THE NATURALISTIC DRAMA. Two hours, second semester, at 8, alternating with 157. Kruse.

157.—THE DRAMA OF THE ROMANTICISTS. Two hours, second semester, at 8. Kruse.

158.—MODERN SWEDISH. Two hours, first semester, and three hours, second semester, by appointment. Fort's *Elementary Swedish Grammar*, Hildebrand's *Läsebok*; Esaias Tegnér's *Fritiofssaga* and *Nattwardsbarnen*. Sturtevant.

159.—TEACHERS' COURSE. Three hours, second semester. Advanced grammar, with theory and practice of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Open only to the best students of the department. Carruth and Corbin. (See *School of Education* 63.)

GREEK.

Professor WILCOX.
Associate Professor STERLING.

The following courses may be taken by advanced undergraduates also. For description, see The College.

150.—THE CLOUDS OF ARISTOPHANES AND MEMORABILIA OF XENOPHON. Three hours, first semester, at 9, or by appointment. Wilcox.

151.—THE GORGIAS OF PLATO. Two hours, first semester, at 9, or by appointment. Wilcox.

152.—HOMER'S ILIAD. Three hours, second semester, at 9, or by appointment. Wilcox.

153.—THUCYDIDES. Two hours, second semester, at 9, or by appointment. Wilcox.

154.—GREEK LITERARY CRITICISM. Three hours, first semester, at 9. Wilcox. (Not given in 1913-'14.)

155.—LYRIC POETRY. Two hours, first semester, at 9. Wilcox. (Not given in 1913-'14.)

156.—GREEK LITERARY CRITICISM. Two hours, second semester, at 9. Wilcox. (Not given in 1913-'14.)

157.—LYRIC POETRY. Three hours, second semester, at 9. Wilcox. (Not given in 1913-'14.)

The following courses may be taken as minors:

158.—THE GREEK IN ENGLISH. Three hours, first semester, at 10:15. Sterling.

COURSES WHICH REQUIRE NO KNOWLEDGE OF THE GREEK LANGUAGE.

159.—GREEK LITERATURE IN TRANSLATIONS. Three hours, first semester, at 11:15. Wilcox.

160.—GREEK DRAMA IN TRANSLATIONS. Two hours, second semester, at 11:15. Wilcox.

161.—GREEK ARCHITECTURE. Two hours, first semester, at 11:15. Wilcox.

162.—GREEK SCULPTURE AND PAINTING. Three hours, second semester, at 11:15. Wilcox.

HISTORY AND POLITICAL SCIENCE.

Professor HODDER.

Professor BECKER.

Associate Professor PATTERSON.

Associate Professor DYKSTRA.

Assistant Professor CRAWFORD.

Assistant Professor DAVIS.

History.

100 and 101.—SEMINAR IN EUROPEAN HISTORY. Three or five hours' credit, first and second semesters, hours by appointment. A study of the sources in some restricted field and the preparation of papers based upon them. Designed to give practical experience in historical investigation. Becker.

102 and 103.—SEMINAR IN AMERICAN HISTORY. Three or five hours' credit, first and second semester, hours by appointment. Practice work with source material. The subjects for investigation will be taken from the history of the trans-Missouri West. Hodder.

Political Science.

104 and 105.—SEMINAR IN POLITICAL SCIENCE. Three hours' credit, first and second semesters, hours by appointment. Individual investigation under the direction of the instructor. The

topics will be in the field of American political parties and party reform. Open, by permission, to Seniors. Dykstra.

106.—POLITICAL THEORIES. Two hours, second semester, at 11:15. A brief review of ancient and mediæval political philosophy, followed by a study of modern English and continental political theories. Dykstra.

The following courses are open to advanced undergraduates also. For full description, see The College.

History.

150.—GREEK HISTORY. First semester, two hours, at 11:15. Patterson.

151.—ROMAN HISTORY. Second semester, two hours, at 11:15. Patterson.

152.—MEDIÆVAL CULTURE. First semester, two hours, at 9. Patterson.

154.—THE ITALIAN RENAISSANCE. Second semester, two hours, at 9. Patterson.

157 and 158.—ENGLISH INSTITUTIONS. First and second semesters, two hours, at 10:15. Crawford.

160.—THE OLD RÉGIME IN FRANCE. First semester, two hours, at 1:30. Becker.

161.—FRENCH REVOLUTION. Second semester, two hours, at 1:30. Becker.

162 and 163.—EUROPE IN THE NINETEENTH CENTURY. First and second semesters, three hours, at 1:30. Becker.

164.—AMERICAN COLONIAL HISTORY. First semester, three hours, at 2:30. Hodder.

165.—THE REVOLUTION AND THE CONSTITUTION. Second semester, three hours, at 2:30. Hodder.

166 and 167.—PRESIDENTIAL ADMINISTRATIONS. First and second semesters, five hours, at 3:30. Hodder.

168.—HISTORICAL METHOD. First semester, two hours, at 2:30. Becker.

Political Science.

150.—PRINCIPLES OF POLITICAL SCIENCE. First semester, three hours, at 9. Dykstra.

151.—EUROPEAN GOVERNMENT. Second semester, three hours, at 10:15. Davis.

152.—AMERICAN CONSTITUTIONAL LAW. First semester, two hours, at 2:30. Hodder.

153.—INTERNATIONAL LAW. Second semester, two hours, at 2:30. Hodder.

154.—GOVERNMENT OF DEPENDENCIES. First semester, two hours, at 11:15. Davis.

155.—MUNICIPAL GOVERNMENT. Second semester, three hours, at 9. Dykstra.

HOME ECONOMICS.

Professor DAY.

100.—RESEARCH COURSE. Three to five hours, either semester, by appointment. Original investigation of some unsolved problem relating to the home. Open to graduate students who have sufficient preparation. Day.

The following courses are open to undergraduates also:

151.—DIETETICS. Three hours, first semester, at 3:30. Day.

152.—SPECIAL PROBLEMS IN DIETETICS. Three hours, second semester. Day.

150.—SPECIAL PROBLEMS IN FOOD PREPARATION. Three hours, second semester. Day.

INDUSTRIAL RESEARCH.

Professor DUNCAN.

Research in the following subjects is now being conducted:

7.—THE RELATION BETWEEN THE OPTICAL PROPERTIES OF GLASS AND ITS CHEMICAL COMPOSITION.

13.—THE UTILIZATION OF PETROLEUM IN THE MANUFACTURE OF SOAP.

14.—THE UTILIZATION OF GILSONITE.

15.—THE HARDENING AND PURIFYING OF COTTONSEED OIL.

16.—THE UTILIZATION OF LEATHER WASTE.

17.—TREATMENT OF LOW-GRADE COPPER ORES.

18.—TREATMENT OF LOW-GRADE COPPER ORES, No. II.

LATIN LANGUAGE AND LITERATURE.

Professor WALKER.

Associate Professor OLIVER.

Assistant Professor MURRAY.

Assistant Professor ———.

100.—THE TOPOGRAPHY OF ROME. Two hours, second semester, at 9. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present written reports on subjects investigated by himself. Oliver.

101.—INVESTIGATION IN ROMAN POLITICAL INSTITUTIONS. Two to five hours, first semester, by appointment. Given only in connection with course 159. This course will be conducted by additional lectures, and by additional investigations by members of the course. Murray.

102.—LATIN EPIGRAPHY. Three hours, second semester, at 10:15. This course has as its object an acquaintance with the forms and subject matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional, and economic history, and to other fields. Murray.

103.—INVESTIGATION IN LATIN EPIGRAPHY. Two to five hours, by appointment. Given only in connection with course 102. Additional investigation of special topics will be expected of members of the course. Murray.

104.—ELEMENTARY SANSKRIT. Three hours, first semester, at 2:30.

105.—COMPARATIVE GRAMMAR (sounds and inflections). Three hours, second semester, at 11:15.

106.—SEMINAR. Three or five hours, first semester, at 11:15. An author or some limited portion of the field of Latin study is chosen each year for special investigation by the graduate students of the department. Latin syntax has been chosen for the year 1913-'14. Walker.

107.—SEMINAR (continued). Three or five hours, second semester, at 2:30, by appointment. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time is devoted to the working up of that subject. Walker.

The following courses are open to undergraduates also. For description, see The College.

150.—ADVANCED LATIN COMPOSITION. Two hours, first semester, at 1:30. Murray.

151.—PLAUTUS. (Not given in 1913-'14.)

152.—VERGIL'S ECLOGUES AND GEORGICS. (Not given in 1913-'14.)

153.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours, second semester, at 10:15. Oliver.

154.—PLINY'S LETTERS. Two hours, first semester, at 2:30.

155.—LUCRETIVS. (Not given in 1913-'14.)

156.—THE ANNALS OF TACITUS. (Not given in 1913-'14.)

157.—JUVENAL. Three hours, second semester, at 9. Murray.

158.—LITERATURE OF THE EMPIRE. Three hours, first semester, at 10:15. Oliver.

159.—ROMAN POLITICAL INSTITUTIONS. Three hours, first semester, at 1:30. Murray.

160.—CÆSAR'S GALLIC CAMPAIGNS. Three hours, second semester, at 1:30. Walker.

161.—VERGIL. (Not given in 1913-'14.)

162.—TEACHERS' COURSE IN LATIN. Two hours, first semester, at 10:15. Walker.

LAW.

Professor GREEN.
 Professor BURDICK.
 Professor HIGGINS.
 Professor HILL.
 Associate Professor HUMBLE.

100.—CONSTITUTIONAL LAW. Five hours' credit. Daily, second semester, at 11:15. General principles governing constitutions; the United States and the states; establishment and amendment of constitutions; construction and interpretation; departmental powers; police power; eminent domain; taxation; civil rights; constitutional guaranties; laws impairing the obligation of contracts; retroactive laws. Green.

101.—COMMON LAW PLEADING. Two and one-half hours' credit. Daily, first half of first semester, at 8. An analytical and historical study of the law of remedies at common law, including ancient modes of trial; special topics assigned, such as *assumpsit*, *trover*, *trespass*, for historical investigation of the development of the law of contracts and of torts. Higgins.

102.—JURISPRUDENCE. Two and one-half hours' credit. Daily, first half of first semester, at 11:15. An analytical study of the elements of jurisprudence, viz.: the science of human relations regulated by positive law; the theories of the state, sovereignty and government; an historical examination of the systems of English and American common law and equity. Selected readings. Special topics and weekly conferences. Humble.

103.—ROMAN LAW. One hour a week for twenty-seven weeks, first semester and first half of second semester, at 9. Development and extension of Roman law; its revival and present influence; the *corpus juris civilis*; the law of persons, of the family, of property, of servitude, of obligations, of delicts, of inheritance, of procedure, of criminal law, etc. Burdick.

MATHEMATICS.

Associate Professor VAN DER VRIES.
 Associate Professor ASHTON.
 Assistant Professor MITCHELL.
 Assistant Professor WHITE.
 Assistant Professor DUVAL.

100.—THEORY OF FUNCTIONS OF A COMPLEX VARIABLE. Three hours, throughout the year, by appointment. An introduction to the general theory of functions of a complex variable. Ashton.

101.—THEORY OF FUNCTIONS OF A REAL VARIABLE. Three hours, throughout the year, by appointment. The theory of assemblages, limits, continuity, convergence, derivatives, integrals, etc. Mitchell.

102.—THEORY OF ELLIPTIC FUNCTIONS. Three hours, throughout the year. Ashton. (Not to be given in 1913-'14.)

104.—CALCULUS OF VARIATIONS. Two hours a week, throughout the year, by appointment. The conditions for minimizing an integral by curves in a plane and in space, with applications to geometry and mechanics. White.

110.—THEORY OF CURVES AND SURFACES. Three hours, throughout the year. Van der Vries.

111.—DIFFERENTIAL GEOMETRY. Two hours, throughout the year, by appointment. Applications of the calculus to the theory of curves and surfaces. (Not to be given in 1913-'14.)

112.—ALGEBRAIC INVARIANTS AND COVARIANTS. Three hours, throughout the year, by appointment. An introduction to modern methods in the algebra of invariants and covariants; binary forms, Gordan's theorem, apolarity and rational curves, ternary forms and geometrical applications. Van der Vries.

113.—PROJECTIVE GEOMETRY II. Three hours, throughout the year, by appointment. The logical foundations of projective geometry; principle of duality; projective transformations in one-, two- and three-dimensional forms; conic sections; introduction of analytic methods on a synthetic basis. The general projective group and its important subgroups. Mitchell.

114.—FOURIER'S SERIES, AND THE POTENTIAL FUNCTION. Three hours, throughout the year, by appointment. Development of functions in Fourier's series, with applications to the solution of problems in physics. Introduction to spherical harmonics. The potential function. Prerequisites, courses 50, 51, 55. Ashton and Rice.

120.—CELESTIAL MECHANICS. Three hours, throughout the year, by appointment. Rectilinear motion, central forces, attraction, and potential, the two-body problem, general integrals of the problem of n bodies, the three-body problem, perturbations. Moulton's Celestial Mechanics and collateral reading. (Not to be given in 1913-'14.)

The following courses may also be taken by advanced undergraduates. For description, see The College.

150.—ANALYTICAL MECHANICS. Second semester, three hours, at 10:15. Duval.

151.—DIFFERENTIAL EQUATIONS. First semester, three hours, at 10:15. White.

152.—ADVANCED CALCULUS I. First semester, two hours, at 11:15. Ashton.

153.—ADVANCED CALCULUS II. Second semester, three hours, at 11:15. White.

155.—HIGHER ALGEBRA I. First semester, three hours, at 11:15. Mitchell.

156.—HIGHER ALGEBRA II. Second semester, two hours, at 11:15. Mitchell.

157.—COMPLEX NUMBERS. Second semester, two hours, at 10:15. Ashton.

158.—GALOIS'S THEORY OF EQUATIONS. First semester, two hours, at 10:15. Ashton.

159.—MODERN GEOMETRY I. First semester, three hours, at 9. Van der Vries.

160.—MODERN GEOMETRY II. Second semester, three hours, at 9. Van der Vries.

161.—PROJECTIVE GEOMETRY I. Second semester, two hours, at 9. Van der Vries.

162.—HISTORY OF MATHEMATICS. First semester, two hours, at 9. Mitchell.

189.—TEACHERS' COURSE. Second semester, two hours, Mitchell.

MEDICAL SCIENCES.

Professor SUDLER.

Professor BARBER.

Associate Professor TRIMBLE.

Associate Professor HERTZLER.

The following courses in medical science are given at Rose-dale:

100.—BACTERIOLOGY. Five or ten hours, first or second semester, or both semesters, by appointment.

101.—PATHOLOGY. Five or ten hours, first or second semester, or both semesters, by appointment. Trimble.

102.—SURGICAL PATHOLOGY. Five or ten hours, first or second semesters, or both semesters, by appointment. Hertzler.

PHARMACY.

Professor SAYRE.

Professor HAVENHILL.

Assistant Professor EMERSON.

For equipment, see under School of Pharmacy.

100.—PHYTOCHEMISTRY (Plant Chemistry). Five hours, first or second semester. Original investigation and research work on the chemical constituents of plants, dealing especially with such constituents as exert a marked physiological action when introduced into the animal economy. Sayre and Emerson.

101.—ADVANCED COURSE IN THE CHEMISTRY OF DIGESTION. Lectures, recitation and laboratory work on the chemistry of digestion. The last half semester devoted to research work on the digestion of foodstuffs. Five hours, first semester. Sayre and Emerson.

The following courses are open to advanced undergraduates also. For description, see The College.

150.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. Five hours, second semester, 1:30 to 3:30. Emerson.

151.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Sayre and Emerson.

Open to graduates and advanced undergraduates:

152.—ANALYSIS OF DRUGS AND DIETETICS. Four hours, either semester. This is a companion course to food analysis (see chemistry 158), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre and Havenhill.

PHILOSOPHY.

Professor TEMPLIN.
 Assistant Professor ROGERS.
 Assistant Professor MITCHELL.
 Mr. DOCKERAY.

100.—PHILOSOPHICAL SEMINAR. Five or ten hours, first semester, by appointment. Opportunity will be given graduate students to continue in a more exhaustive manner the study of any of the subjects offered in the College courses, and to engage in original investigation of unsolved problems. The work will be arranged to suit the special needs of individual students and will be under the immediate supervision of some instructor in the department.

101.—PHILOSOPHICAL SEMINAR. Five or ten hours, second semester, by appointment. A continuation of the preceding course.

102.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours, first semester. Opportunity is given graduate students for the advanced study of special topics in psychology. The organization of the seminar will take different forms to meet the needs of its members. Individual study of theoretical questions will be provided for by individual appointment. Group study of theoretical questions will be conducted through weekly meetings. For those who wish to undertake laboratory research, a schedule will be arranged for exchange of hours in participating in turn as experimenter and as subject, and for occasional meetings for the discussion of methods and results.

103.—PSYCHOLOGICAL SEMINAR. Three, five, or ten hours, second semester. A continuation of course 102.

The following courses are also open to advanced undergraduates. For description, see The College.

151.—PSYCHOLOGY OF THOUGHT. Three hours, first semester, at 11:15. Dockeray.

152.—FEELING AND WILL. Two hours, second semester, at 1:30. Dockeray.

153.—COMPARATIVE PSYCHOLOGY. Three hours, second semester, at 11:15. Dockeray.

154.—PSYCHOTHERAPY. Two hours, second semester, at 11:15. Rogers.

155.—ADVANCED PSYCHOLOGY. Two to five hours, first semester. Rogers and Dockeray.

156.—ADVANCED PSYCHOLOGY. Two to five hours, second semester. Rogers and Dockeray.

157.—SOCIAL PSYCHOLOGY. Two hours, first semester, at 11:15. Rogers.

158.—CHILD PSYCHOLOGY. Two hours, second semester, at 9. Rogers.

160.—HISTORY OF ANCIENT PHILOSOPHY. Three hours, first semester, at 10:15.

161.—HISTORY OF MODERN PHILOSOPHY. Three hours, second semester, at 10:15.

162.—PHILOSOPHICAL CLASSICS. Three hours, first semester, at 10:15.

163.—PHILOSOPHICAL CLASSICS. Two hours, second semester, at 10:15.

164.—THEORY OF KNOWLEDGE. Three hours, first semester.

165.—METAPHYSICS. Three hours, second semester.

166.—THE PHILOSOPHY OF RELIGION. Two hours, second semester, at 9.

167.—ADVANCED LOGIC. Three hours, second semester, at 1:30. Mitchell.

170.—SYSTEMATIC ETHICS. Three hours, first semester, at 8. Templin.

171.—PRACTICAL ETHICS. Two hours, second semester, at 8. Templin.

172.—ESTHETICS. Two hours, second semester, at 8. Templin.

PHYSICS AND ASTRONOMY.

Professor KESTER.

Associate Professor M. E. RICE.

Assistant Professor STIMPSON.

Mr. T. T. SMITH, Instructor.

Mr. R. K. YOUNG, Instructor.

Physics.

100.—GRADUATE LABORATORY. Two to five hours, either semester, by appointment. Kester and M. E. Rice.

101.—THEORETICAL MECHANICS. Three hours, through first and second semesters, by appointment. Lectures, with a problem hour each week. Prerequisites, course 50 or its equivalent, and another course of the same grade. Offered in alternate years. Kester.

102.—THEORY OF HEAT AND THERMODYNAMICS. Two hours, through first and second semesters, by appointment. Lectures, and problems. A development of Gibbs's ideas of thermodynamic potentials and of equilibrium in systems containing several components in various phases. Prerequisites, courses 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. Kester.

103.—THEORY OF ELECTRICITY. Three hours, through first and second semesters, by appointment. Lectures, and problems. Prerequisites, course 52 or its equivalent, and another course of the same grade. Offered in alternate years. (Not offered in 1913-'14.) Kester.

104.—ADVANCED OPTICS. Two hours, through first and second semesters, by appointment. Lectures and problems. A development of the electromagnetic theory of light, of the Abbe theory of optical instruments, etc. Prerequisites, course 51 or its

equivalent, and another course of the same grade. Offered in alternate years. (Not offered in 1913-'14.) Smith.

Courses 101, 102, 103 and 104 together form a two-year cycle, developing the fundamental parts of physics in a rigorous and detailed manner. Other courses, covering more special (in some cases newer) topics, are listed below.

105.—ELECTRON THEORY. Two hours, throughout the year, by appointment. Theory of electromagnetic mass and of conduction of electricity through metals. Prerequisites, physics 50 and 51, or 52 and 53, or equivalents. Offered in alternate years. (Offered in 1913-'14 if the demand warrants it.) Kester.

106.—OSCILLATORY ELECTRIC CURRENTS AND ELECTROMAGNETIC WAVES. Three hours, second semester, by appointment. Lectures and problems, giving the principles which underlie wireless telegraphy and telephony. Prerequisites, course 52 or its equivalent, another course of same grade and some differential equations. Offered in alternate years. (Not offered in 1913-'14.) M. E. Rice.

107.—RESEARCH AND THESIS. Three to ten hours, either semester. Students who are carrying on original investigation (either experimental or theoretical) in physics will register in this course. Kester and M. E. Rice.

114 (also Mathematics 114).—FOURIER'S SERIES AND THE POTENTIAL FUNCTION. Three hours, throughout the year, by appointment. Development of functions in Fourier's series, with applications to the solutions of problems in physics. Introduction to spherical harmonics. The potential function, with applications to problems in electricity. Prerequisites, physics 50 or mathematics 50, mathematics 51 and 55, or equivalent. Offered in alternate years. (Not offered in 1913-'14.) M. E. Rice and Ashton.

The following courses may be taken by advanced undergraduates also. For description, see The College.

150.—MECHANICS AND HEAT. Three hours, first semester, by appointment. Kester.

It is recommended that this course be followed by Mathematics 150, Analytic Mechanics. Three hours.

151.—LIGHT AND RADIANT ENERGY. Three hours, second semester, by appointment. (Offered in alternate years.) T. T. Smith.

152.—ELECTRICITY. Three hours, first semester, Monday, Wednesday, and Friday, at 9. M. E. Rice.

153.—RADIOACTIVITY AND CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours, second semester. (Offered in alternate years.) Kester. (Not offered in 1913-'14.)

154.—PHYSICS LABORATORY. Mechanics and heat. Two to five hours, by appointment. Kester.

155.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours, by appointment. T. T. Smith.

156.—PHYSICS LABORATORY. Electricity. Two to five hours, by appointment. M. E. Rice.

157.—PHYSICS LABORATORY. Radioactivity. Two to five hours, by appointment. Kester.

158.—ADVANCED LABORATORY. Two to five hours, first semester. Kester and M. E. Rice.

159.—ADVANCED LABORATORY. Two to five hours, second semester, by appointment. Kester and M. E. Rice.

160.—OPTICAL INSTRUMENT. Three hours, second semester, by appointment. (Offered in alternate years.) T. T. Smith. (Not offered in 1913-'14.)

161.—ALTERNATING AND OSCILLATING CURRENTS. Three hours, second semester, by appointment. (Offered in alternate years.) M. E. Rice.

163.—PHYSICS COLLOQUIUM. One hour, either semester, by appointment.

165.—RECENT ADVANCES IN PHYSICS. One hour, first semester, Tuesday, at 9.

166.—RECENT ADVANCES IN PHYSICS. One hour, second semester, Tuesday, at 9.

180.—TEACHERS' COURSE IN PHYSICS. Three hours, second semester, at 11:25. Stimpson.

Astronomy.

Open to graduates only.

100.—INTRODUCTION TO CELESTIAL MECHANICS. Three hours, second semester, by appointment. Prerequisites, astronomy 1, physics 5 and 6 or equivalent, analytical geometry, and calculus. R. K. Young.

Open to undergraduates and graduates:

182.—SPHERICAL AND PRACTICAL ASTRONOMY. One lecture and one laboratory period throughout the year, by appointment. Determination of time, use of the sextant, theory of refraction, aberration and eclipses. Students may obtain credit for each semester's work. Prerequisites, descriptive astronomy, trigonometry, and some knowledge of the calculus. R. K. Young.

184.—INTRODUCTION TO ASTROPHYSICS. Three hours, first semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical condition of celestial bodies. Prerequisites, astronomy 1, physics 5 and 6, and the calculus. R. K. Young.

185.—THEORETICAL ASTRONOMY. Three hours, second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 1, and the calculus. R. K. Young.

186.—PRACTICAL WORK IN COMPUTING. To be taken in conjunction with 185. Two afternoons or six hours per week, second semester. R. K. Young.

PHYSIOLOGY.

Professor HYDE.
 Assistant Professor CHILLINGWORTH.
 Miss WALLING, Instructor.

100.—PHYSIOLOGY. Ten hours, first semester, 8 to 12:15, and half of second semester. Advanced experimental physiology. Open to graduates and medical students who have taken not less than a year of anatomy and have given evidence that they are prepared for it. Recitations and lectures, with demonstrations, conferences and journal club, and laboratory experimental work. Chillingworth.

101.—PHYSIOLOGY. Five or ten hours, either semester or both, by appointment. Original research, open to graduates who have had either course 51 or 100 in physiology. Hyde.

102.—SEMINAR OF EXPERIMENTAL PHYSIOLOGY. Two to five hours, either semester, by appointment. A research course for advanced students who are prepared for it. Hyde.

The following course is open to advanced undergraduates also. See The College.

150.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours, either semester or both, by appointment. Hyde.

ROMANCE LANGUAGES.

Professor GALLOO.
 Assistant Professor NEUEN SCHWANDER.
 Assistant Professor OWEN.
 Miss STANTON.
 Miss ENKE.

French.

100.—OLD FRENCH. Three hours, first semester. Phonology and morphology of old French, with some discussion of syntax. *Le Pèlerinage de Charlemagne à Jérusalem; Aucassin et Nicolette.* Must be preceded by courses 161 and 162 or their equivalents. Galloo.

101.—HISTORY OF THE FRENCH LANGUAGE. Three hours, second semester, by appointment. Its rise from Low Latin; the additions from other sources; its growth and modifications Galloo.

102.—PROVENÇAL. Two hours, first semester, by appointment. Grandgent's *Provençal Phonology and Morphology* and Bartsch's *Chrestomathie Provençale.* Neuen Schwander.

103.—MEDIÆVAL FRENCH LITERATURE. Three hours, second semester, by appointment. From the first literary monuments to the Renaissance. Galloo.

104.—FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Two hours, first semester, by appointment. The Renaissance in French literature. The beginnings of Classicism. The *Pléiade.* Galloo.

105.—MOLIERE. Three hours, first semester, by appointment.

Same course as 8, with additional requirements. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. Galloo.

106.—THE LITERARY MOVEMENT IN THE SECOND HALF OF THE NINETEENTH CENTURY. Three hours, second semester, by appointment. The reaction against Romanticism, the Parnassiens, realism and naturalism. The reaction against the scientific spirit; idealism and symbolism. The rise and growth of the new literary criticism. A large amount of reading is required. Reports and an essay in French. Galloo.

107 and 108.—SEMINAR. Five hours, each semester, by appointment. Research course for advanced students, who will be given an opportunity, under the immediate supervision of the department, to carry on investigation in the field of Romance linguistics or literature. Galloo.

The following courses are open to undergraduates also. For description, see The College.

152.—HISTORY OF EARLY FRENCH LITERATURE. Three hours, first semester, Monday, Wednesday, and Friday, at 9. Galloo.

153.—HISTORY OF MODERN FRENCH LITERATURE. Three hours, second semester, Monday, Wednesday, and Friday, at 9. Galloo.

154.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours, second semester, by appointment. Stanton.

155.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours, second semester, by appointment. Neuen Schwander.

156.—THE ROMANTIC SCHOOL (1800-1835) I. Two hours, first semester, at 9. Galloo.

157.—THE ROMANTIC SCHOOL (1800-1835) II. Two hours, second semester, at 9. Galloo.

158.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours, first semester, at 9. Galloo.

159.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours, second semester, at 9. Galloo.

160.—THE FRENCH DRAMA. Three hours, first semester, Monday, Wednesday, and Friday, at 1:30. Stanton.

161.—OLD FRENCH. Two hours, first semester, by appointment. Galloo.

162.—OLD FRENCH. Two hours, second semester, by appointment. Galloo.

163.—TEACHERS' COURSE. Three hours, second semester, by appointment. Galloo.

Spanish.

100.—EARLY SPANISH. Two hours, second semester, by appointment. Menéndez Pidal's Manual de gramática histórica española; Poema del Cid (Menéndez Pidal ed.) and Poema de Fernán González (Marden ed.). Owen.

The following courses are open to undergraduates also. For description, see The College.

152.—DON QUIXOTE. Three hours, second semester, at 2:30. Enke.

153.—HISTORY OF EARLY SPANISH LITERATURE. Three hours, first semester, at 1:30. Owen.

154.—HISTORY OF MODERN SPANISH LITERATURE. Three hours, second semester, at 1:30. Owen.

155.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours, first semester, by appointment. Owen.

156.—THE CLASSIC SPANISH DRAMA. Two hours, second semester, by appointment. Owen.

SOCIOLOGY.

Professor BLACKMAR.
Assistant Professor HELLEBERG.
Assistant Professor ———.

100.—SEMINAR OF SOCIOLOGY. Two to ten hours, either semester, by appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the direction of one of the instructors. Blackmar and Helleberg.

101.—AMERICAN AND EUROPEAN CHARITIES. Five hours, by appointment. Research course. A study of charities administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions, with special reference to methods of state control. Helleberg.

102.—PREPARATION FOR PUBLIC SERVICE. Three hours, second semester, Monday, Wednesday, and Friday, by appointment. A study of the administration of charitable and penal institutions. The business administration of public affairs. Preparation for civil service. A research course in the library supplemented by the investigation of institutions by visitation. Lectures by experienced officials on institutional administration and practical politics. For advanced students who desire to prepare for public service. Blackmar.

105.—AMERICAN ETHNOLOGY. Five hours, by appointment. Research course in the natural races of America. Migration and geographical distribution of tribes. Comparative characteristics of tribes and ethnic groups. Government and organization of tribes. The beginnings of civilization, the food supply, and the progress in the industrial arts. Blackmar.

106.—EUGENICS. Three hours, second semester, by appointment. A study of the agencies under social control that may improve or impair racial qualities, either mentally, morally or

physically. Organic evolution or genetics is a prerequisite for this course. Blackmar.

107.—DEVELOPMENT OF SOCIOLOGICAL THEORY. Three hours, by appointment, second semester. A rapid historical survey of social philosophy from Plato to Comte, followed by a more detailed examination of current sociological theories. Helleberg.

The following courses are open to undergraduates and graduates:

150.—ELEMENTS OF SOCIOLOGY. Three hours, each semester, Monday, Wednesday, and Friday, at 8. Blackmar.

151.—APPLIED SOCIOLOGY. Three hours, second semester, Monday, Wednesday, and Friday, at 1:30. Blackmar.

152.—SOCIAL PATHOLOGY. Two hours, first semester, Tuesday and Thursday, at 1:30. Helleberg.

153.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours, second semester, Tuesday and Thursday, at 1:30. Helleberg.

154.—SOCIALIZATION AND SOCIAL CONTROL. Three hours, first semester, Monday, Wednesday, and Friday, at 2:30. Helleberg.

155.—PSYCHOLOGICAL SOCIOLOGY. Three hours, second semester, Monday, Wednesday, and Friday, at 2:30. Helleberg.

156.—THE FAMILY. Two hours, first semester, at 2:30. Helleberg.

157.—SOCIALISM. Two hours, first semester, Tuesday and Thursday, at 2:30. Helleberg.

158.—ANTHROPOLOGY. Two hours, first semester, Tuesday and Thursday, at 8. Blackmar.

159.—ETHNOLOGY. Two hours, second semester, Tuesday and Thursday, at 8. Blackmar.

160.—RURAL SOCIOLOGY. Three hours, second semester, at 1:30, alternating with applied sociology. (Given in 1913.) Blackmar.

164.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Two hours, second semester, Tuesday and Thursday, at 3:30. Helleberg.

ZOOLOGY.

Assistant Professor BAUMGARTNER.

Assistant Professor MOODIE.

Assistant Professor ROBERTSON.

Miss NOWLIN.

100.—SEMINAR. Students working for a degree with the major in the department of zoölogy will register in this course for credit in work done in preparation for their theses. Credit will be given only upon a satisfactory presentation of the subject matter of the thesis before the department Faculty.

101.—PROBLEMS IN MORPHOLOGICAL ZoöLOGY. Five or ten hours, throughout the year. Baumgartner.

102.—PROBLEMS IN SYSTEMATIC AND DESCRIPTIVE ZoöLOGY. Five or ten hours, throughout the year, by appointment. Moodie.

103.—PROBLEMS IN HISTOLOGY AND CELLULAR BIOLOGY. Five or ten hours, throughout the year, by appointment. Baumgartner.

104.—PROBLEMS IN VERTEBRATE PALEONTOLOGY. Five or ten hours, throughout the year, by appointment. Moodie.

105.—PROBLEMS IN ORGANOGENESIS AND CELLULAR EMBRYOLOGY. Five or ten hours, throughout the year, by appointment. Robertson.

106.—PROBLEMS IN GENETICS. Five or ten hours, throughout the year, by appointment. Robertson.

107.—PROBLEMS IN PROTOZOÖLOGY. Five or ten hours, throughout the year, by appointment. Nowlin.

108.—ZOÖLOGICAL CONFERENCE. One hour, either semester, by appointment. Graduate and advanced undergraduate students meet with the instructors for the discussion of current zoölogical problems. Reports on assigned subjects.

The following courses may be taken by advanced undergraduates also. For description, see College catalogue.

150.—SYSTEMATIC ZOÖLOGY. Five hours, first semester, 3:30 to 5:30. Moodie.

151.—FIELD WORK AND LIFE HISTORIES. Three or six hours, second semester, Monday and Friday, at 3:30, and Saturday morning. Baumgartner.

153.—HISTOLOGY, OR MICROSCOPIC ANATOMY. Five hours, first semester, 3:30 to 5:30. Baumgartner.

154.—CYTOLOGY. Five or ten hours, throughout the year, by appointment. Robertson.

155.—EMBRYOLOGY. Five hours, second semester, by appointment. Robertson.

156.—PALEOZOÖLOGY. Five hours, by appointment, first or second semester. Moodie.

157.—FIELD AND MARINE STATION WORK. Three, six or nine hours, summer term.

162.—ORGANIC EVOLUTION. Three hours, first semester, at 9. Stevens and Robertson.

171.—PROTOZOÖLOGY. Five or ten hours, throughout the year, by appointment. Nowlin.

172.—HEREDITY AND GENETICS. Three or five hours, second semester, at 9, 10. Robertson.

THE COLLEGE OF LIBERAL ARTS AND SCIENCES.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM H. CARRUTH, PH. D., Vice President, and Professor of Germanic Languages and Literatures.

OLIN TEMPLIN, A. M., Dean, and Professor of Philosophy.

EPHRAIM MILLER, PH. D., Emeritus Professor of Mathematics and Astronomy.

EDGAR H. S. BAILEY, PH. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, PH. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, B. S., PH. M., Professor of Pharmacy.

LEWIS L. DYCHE,* M. S., Professor of Systematic Zoölogy.

FRANK W. BLACKMAR, PH. D., Professor of Sociology and Economics.

CHARLES G. DUNLAP, LITT. D., Professor of English Literature.

EDWIN M. HOPKINS, PH. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, PH. M., Professor of American History and Political Science.

ERASMUS HAWORTH, PH. D., Professor of Geology.

ARTHUR T. WALKER, PH. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

WILLIAM A. GRIFFITH, Professor of Drawing.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

JOHN E. BOODIN,* PH. D., Professor of Philosophy.

IDA H. HYDE, PH. D., Professor of Physiology.

JAMES NAISMITH, M. D., Professor of Physical Education.

SAMUEL J. HUNTER, A. M., Professor of Entomology.

* Absent on leave.

- CARL L. BECKER, PH. D., Professor of European History.
FREDERICK E. KESTER, M. E., Professor of Physics.
EDNA D. DAY, PH. D., Professor of Home Economics.
HAMILTON P. CADY, PH. D., Professor of Chemistry.
MERLE THORPE, A. B., Professor of Journalism.
THOMAS H. BOUGHTON, M. D., Professor of Bacteriology and Pathology.
HARRY A. MILLIS, PH. D., Professor of Economics.
MILES W. STERLING, A. M., Associate Professor of Greek.
R. D. O'LEARY, A. B., Associate Professor of Rhetoric.
HANNAH OLIVER, A. M., Associate Professor of Latin.
ELMER F. ENGEL, A. M., Associate Professor of German.
SELDEN L. WHITCOMB, A. B., Associate Professor of English Literature.
MARTIN E. RICE, M. S., Associate Professor of Physics and Electrical Engineering.
JOHN N. VAN DER VRIES, PH., D., Associate Professor of Mathematics.
FREDERICK H. BILLINGS, PH. D., Associate Professor of Botany and Bacteriology.
DAVID L. PATTERSON, B. S., Associate Professor of History.
LOUIS E. SISSON, A. M., Associate Professor of Rhetoric.
CLARENCE A. DYKSTRA, A. B., Associate Professor of History.
ARTHUR J. BOYNTON, A. M., Associate Professor of Economics.
CHARLES H. ASHTON, PH. D., Associate Professor of Mathematics.
ALBERTA L. CORBIN, PH. D., Associate Professor of German.
WILLIAM O. HAMILTON, A. B., Associate Professor of Physical Education.
FRANK B. DAINS, PH. D., Associate Professor of Chemistry.
MARGARET L. JOHNSTON, M. D., Associate Professor of Physical Education.
WILLIAM A. WHITAKER, M. A., Associate Professor of Metallurgy.
MARGARET LYNN, A. M., Assistant Professor of English.
EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.
WILLIAM J. BAUMGARTNER, A. M., Assistant Professor of Zoölogy and Histology.
HENRY O. KRUSE, A. M., Assistant Professor of German.
ELISE NEUENSCHWANDER, A. B., Assistant Professor of Romance Languages.

CHARLES H. GRAY, PH. D., Assistant Professor of English Language.

LEON N. FLINT, A. B., Assistant Professor of Journalism.

CLARENCE C. CRAWFORD, PH. D., Assistant Professor of European History.

EARL W. MURRAY, A. B., Assistant Professor of Latin.

HENRY L. JACKSON,* B. S., Assistant Professor of Chemistry.

JAMES E. TODD, A. B., Assistant Professor of Geology and Mineralogy.

JAMES A. CAMPBELL, A. M., Assistant Professor of German.

WILLIAM S. JOHNSON, PH. D., Assistant Professor of English Literature.

WILLIAM P. WARD, A. B., Assistant Professor of Romance Languages.

ROY LEE MOODIE, PH. D., Assistant Professor of Zoölogy.

DAVID C. ROGERS, PH. D., Assistant Professor of Psychology.

EDWARD M. BRIGGS,† A. M., Assistant Professor of German.

ALBERT M. STURTEVANT, PH. D., Assistant Professor of German.

WILLIAM H. TWENHOFEL, PH. D., Assistant Professor of Geology.

ARTHUR L. OWEN, A. M., Assistant Professor of Romance Languages.

ULYSSES G. MITCHELL, PH. D., Assistant Professor of Mathematics.

MARION B. WHITE, PH. D., Assistant Professor of Mathematics.

LULU GARDNER, A. B., Assistant Professor of Rhetoric.

WILLIAM W. DAVIS, A. M., Assistant Professor of American History and Political Science.

GERHARD A. GESELL, A. B., Assistant Professor of Public Speaking.

VICTOR E. HELLEBERG, A. B., Assistant Professor of Sociology.

CALVERT J. WINTER, PH. B., Assistant Professor of Romance Languages.

DE WITT C. CROISSANT, PH. D., Assistant Professor of English Language.

ARTHUR MITCHELL, PH. D., Assistant Professor of Philosophy.

FREDERICK A. G. COWPER, A. M., Assistant Professor of Romance Languages.

GEORGE E. PUTNAM, B. LITT., Assistant Professor of Economics.

CHARLES A. SHULL, B. S., Assistant Professor of Botany.

WILLIAM R. B. ROBERTSON, A. M., Assistant Professor of Zoölogy.

* Resigned.

† Absent on leave.

GEORGE W. STRATTON, PH. D., Assistant Professor of Chemistry.
HERMAN C. ALLEN, A. M., Assistant Professor of Chemistry.
LALIA V. WALLING, A. M., Instructor in Physiology.
NADINE NOWLIN, A. B., Instructor in Zoölogy.
CHARLES B. ROOT, A. B., Instructor in Physical Education.
ESTHER WILSON,* A. B., Instructor in German.
ALICE WINSTON,* A. B., Instructor in Rhetoric.
MARIA L. BENSON, A. B., Instructor in Design and Ceramics.
ANA JULE ENKE, PH. B., Instructor in Spanish.
ROSE R. MORGAN, A. M., Instructor in Rhetoric.
THEODORE T. SMITH, A. M., Instructor in Physics.
AMIDA STANTON, A. M., Instructor in Romance Languages.
FLOYD C. DOCKERAY, A. M., Instructor in Psychology.
GRACE MIRIAM CHARLES, PH. D., Instructor in Botany.
HELEN G. JONES, PH. B., Instructor in German.
CLARA F. MCINTYRE, A. M., Instructor in Rhetoric.
HERBERT B. HUNGERFORD, A. B., Instructor in Entomology.
HAZEL H. MACGREGOR, A. M., Instructor in Mathematics.
NOBLE P. SHERWOOD, B. S., Instructor in Botany and Bacteriology.
EDWARD L. GRIFFIN, A. B., Instructor in Chemistry.
Emma M. Palmer, A. M., Instructor in German.
MARJORIE BARSTOW, A. B., Instructor in Rhetoric.
HEARTY E. BROWN, A. M., Instructor in Rhetoric.
ELIZABETH NOWELL, B. S., Instructor in Home Economics.
HOWARD E. CURL, A. B., Instructor in Physiology.
REYNOLD K. YOUNG, PH. D., Instructor in Physics and Astronomy.
ADOLPHINE B. ERNST, PH. D., Instructor in German.
HOMER O. LICHTENWALTER, B. S., Instructor in Chemistry.
FREDERICK KELLERMAN, Exchange Teacher in German.
MARGARET S. BECKWITH, Instructor in Physical Education.
MARY E. PINNEY, A. M., Instructor in Zoölogy.
SARAH G. LAIRD, A. M., Instructor in Rhetoric.
SAUL H. LEWIS, A. B., Instructor in Journalism.

* Absent on leave.

COURSES OFFERED IN THE COLLEGE.

The College offers the courses in literature, science and the arts that provide the so-called liberal education, and leaves in the main the applied sciences and arts to other departments. The regulations governing the work required for entrance and that done during the Freshman and Sophomore years are designed to result in the student's having a minimum number of courses in the fundamental branches of knowledge, on which he will base his broader and more specialized work in the Junior and Senior years.

DEGREE CONFERRED.

All graduates of the College receive the degree of bachelor of arts.

ADMISSION.

There are two methods of admission to the College: First, by examination; second, by certificate.

1. BY EXAMINATION.

TIMES AND PLACE. Candidates for admission to first-year work in the College, not presenting the required certificates, will be examined at the University, Lawrence, either on Thursday, Friday and Saturday, June 5, 6 and 7, 1913, or on Monday and Tuesday, September 15, 16, 1913, or during the week of mid-term examinations. The following is the schedule of examinations:

Thursday, June 5, or Monday, September 15.

- 9-10. English.
- 10-11. Algebra.
- 11-12. French.
- 1-2. Physical Geography.
- 2-3. German.
- 3-4. Economics.

Friday, June 6, or Tuesday, September 16.

- 9-10. Geometry.
- 10-11. Latin.
- 11-12. History.
- 2-3. Greek.
- 3-4. Physics.

Saturday, June 7, or Wednesday, September 17.

- 8-9. Botany.
- 9-10. Chemistry.
- 1-2. Zoölogy.
- 2-4. Free-hand Drawing.

Candidates for admission may divide the examination between two years, or between the two examinations of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and, if he is successful in five or more subjects, he need not be again examined in them.

Examinations for advanced standing on work done in preparatory schools, not required for admission, will be held at the same time as entrance examinations.

2. BY CERTIFICATE.

Nearly all students enter the College by certificate from high schools, academies, military schools, or preparatory schools of other colleges and universities, accredited by the University.

The candidates for admission by certificate must present either a certificate of graduation from an accredited preparatory school, or a letter from the principal of such school recommending him for admission without graduation. The certificate should be signed by the principal or other executive officer of the school. Blank certificates will be sent by the Registrar of the University about May 1 of each year to the principal of each accredited school. The certificates of all students expecting to enter the College should be filled out, signed and returned by the principal or superintendent of schools to the Registrar before July 1.

Blank certificates will be sent on application to the Registrar.

ENTRANCE UNIT.

Preparatory work is estimated in terms of the "entrance unit." A subject like algebra, for example, may be pursued one year, *i. e.*, thirty-five weeks, five recitations a week, with at least forty minutes for each recitation, and the work thus done secures the student one "entrance unit." In computing entrance units it must be noted that the laboratory period should be twice the length of a recitation period.

NUMBER OF UNITS REQUIRED.

Fifteen units are necessary for unconditional admission to the College; a temporary deficiency, however, of not more than one unit will be permitted.

MAKING UP DEFICIENCY.

Any entrance deficiency must be made good by enrollment in a preparatory school or under an authorized tutor at the time of matriculation. Work thus done in making good an entrance deficiency does not, of course, give College credit, but it does count as part of the current work of the student in the determination of the number of hours in which he may be enrolled.

Whenever a deficiency has once been made good by the completion of a subject used for the purpose the exchange of any other credit for the credit so used will not be permitted.

COLLEGE CREDIT.

College credit for work done in preparatory schools will be given upon examination only. (See page 110 for times and place of examination.)

SUBJECTS FOR ADMISSION.

A total of fifteen units must be offered for admission. The subjects in which this entrance work may be presented are arranged in seven groups.

Of these fifteen units, eleven and one-half are prescribed by group. The remaining three and one-half units must be chosen subject to the restriction in group VII.

GROUP I.—ENGLISH.

3 or 4 units.

Required: Three units.

GROUP II.—MATHEMATICS.

Accredited subjects:

Elementary algebra, $1\frac{1}{2}$ units.

Plane geometry, 1 unit.

Solid geometry, $\frac{1}{2}$ unit.

Plane trigonometry, $\frac{1}{2}$ unit.

Advanced algebra, $\frac{1}{2}$ unit.

Required: Elementary algebra and plane geometry.

GROUP III.—FOREIGN LANGUAGE.

Accredited subjects:

Latin, 1, 2, 3 or 4 units.

Greek, 1, 2, 3 or 4 units.

German, 1, 2, 3 or 4 units.

French, 1, 2, 3 or 4 units.

Spanish, 1 or 2 units.

Required: Three units in one language or two units in one language and one unit in another.

GROUP IV.—PHYSICAL SCIENCES.

Accredited subjects:

Physical geography, 1 or $\frac{1}{2}$ unit.

Physics, 1 unit.

Chemistry, 1 unit.

Required: One unit.

GROUP V.—BIOLOGICAL SCIENCES.

Accredited subjects:

Botany, 1 unit.

Zoölogy, 1 unit.

Physiology, 1 unit.

Biological science, 1 unit.

Required: One unit.

GROUP VI.—HISTORY AND SOCIAL SCIENCE.

Accredited subjects:

- Greek and Roman history, 1 unit.
- Mediaeval and modern history, 1 unit.
- English history, 1 unit.
- American history, 1 unit.
- Economics, 1 or $\frac{1}{2}$ unit.
- Civics, $\frac{1}{2}$ unit.
- Required:* One unit.

GROUP VII.—MISCELLANEOUS SUBJECTS.

Accredited subjects:

- Psychology, $\frac{1}{2}$ unit.
- Methods of teaching and school management, $\frac{1}{2}$ unit.
- Commercial law, $\frac{1}{2}$ unit.
- Commercial geography, $\frac{1}{2}$ unit.
- Bookkeeping, $\frac{1}{2}$ unit.
- Drawing, 1 unit.
- Woodwork, 1 unit.
- Forging, 1 unit.
- Domestic science, 1 unit.
- Domestic art, 1 unit.
- Agriculture, $\frac{1}{2}$ or 1 unit.
- Music, 1 unit.

Allowed: Three units only may be offered.

Any candidate for admission who is not a graduate of an accredited high school or academy must meet in full, except for one deficiency, the foregoing requirements.

A graduate of an accredited high school or academy who offers fifteen accredited units (of which not more than three are from group VII) will be admitted to the Freshman class even if the units presented do not completely meet the entrance group requirements; provided that he bring from his school a special recommendation of fitness in regard to character, scholarship, and exceptional attainment in some line of study. A student so entering must, as early as possible during the Freshman and Sophomore years, elect such subjects as will complete the entrance group requirements. For such subjects he will receive college credits, but he will not be allowed to count them toward satisfying the college group requirements of the Freshman and Sophomore years.

It should be noticed that certain subjects required for entrance are not taught in the University. These are the first three units of English, elementary algebra and plane geometry. Deficiencies in these subjects must be made up as soon as possible and without college credit.

ENTRANCE SUBJECTS IN DETAIL.

ENGLISH.

Four units (three required).

The requirement in English is that recommended by the National Conference on Uniform Entrance Requirements in English, and accepted by all colleges in the United States. Each of the three required units calls for one year of daily recitations in English subjects, in the proportion of three in English literature to two in English composition. For a fourth unit, accredited high schools may offer a fourth year of English, if approved by the High-school Visitor; and the character of this fourth year's work may be determined with reference to the conditions of individual schools. For full details and explanations, see the High-school Manual, No. IX, published by the University and sent to any address upon application.

MATHEMATICS.

Four units (two and one-half required).

It is assumed that all candidates for admission to the College are proficient in the practical application of arithmetic. The College recommends that the arithmetic in the upper grades be made more algebraic in character or that some elementary algebra be taught in the grades in place of some of the more abstract topics in arithmetic. It also recommends that concrete geometry, under its own name or under the name of geometrical drawing, be taught in the grades.

The student must offer a minimum of two and one-half units, and may offer a maximum of four units, in mathematics, in five subjects, as follows:

ELEMENTARY ALGEBRA. One and one-half units. The required one and one-half units of algebra must consist of the four fundamental operations of algebra; factoring; determination of highest common factor and lowest common multiple by factoring; fractions; simple equations, both numerical and literal; simultaneous equations, both numerical and literal, containing two and three unknown quantities; radicals, including the extraction of the square root of polynomials and of numbers; exponents, including fractional and negative; quadratic equations, in one and two unknown quantities, both numerical and literal, with applications.

Throughout the course the pupil should be required to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also required.

PLANE GEOMETRY. One unit. The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures; the circle and the measurement of

angles; similar polygons; areas; regular polygons, and the measurement of the circle. The solution of numerous original exercises, including loci problems, and the application to the mensuration of lines and plane surfaces is strongly insisted on. This unit is required.

SOLID GEOMETRY. One-half unit. The usual theorems and constructions of good textbooks, including the relations of planes and lines in space; the properties and measurements of prisms, pyramids, cylinders, and cones; the sphere and the spherical triangle; numerous original exercises, including loci problems and applications to the mensuration of surfaces and solids.

PLANE TRIGONOMETRY. One-half unit. Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles; proofs of principal formulas, in particular for the sine, cosine and tangent of the sum and difference of two angles, of the double angle and the half angle, the product expressions for the sum or the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas; solution of trigonometric equations of a simple character; theory and use of logarithms (without the introduction of work involving infinite series); solution of right and oblique triangles and practical applications. Problems should be solved by the use of tables of natural functions, and also by use of tables of logarithms and logarithmic functions.

ADVANCED ALGEBRA. One-half unit. Permutations and combinations, limited to simple cases; complex numbers, with graphic representation of sums and differences; determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations; numerical equations of higher degree, and so much of the theory of equations, with graphic methods, as is necessary for their treatment, including Descartes' rules of signs and Horner's method, but not Sturm's functions or multiple roots.

Most candidates prefer to offer three units of mathematics for entrance; these three units should consist of the two and one-half units of required algebra and plane geometry and one-half unit of solid geometry or plane trigonometry.

As to the order in which the mathematical topics should be taught in the high schools, the following is recommended:

First Year. Elementary algebra, including a brief treatment of quadratic equations.

Second Year. Plane geometry completed.

Third Year. Solid geometry, first half-year; required algebra completed, second half-year.

Fourth Year. Plane trigonometry, first half-year; advanced algebra, second half-year.

It is important that students entering the College should come with the algebra fresh in mind. Schools that do not offer the fourth year in mathematics should teach the last third of the required algebra as late as possible in the course.

LATIN.

One, two, three, or four units.

First Unit. Beginner's Book. In all written exercises the long vowels should be marked, and in all oral exercises pains should be taken to make the pronunciation conform to the quantities. Students should be taught from the beginning to read the Latin aloud with intelligent expression.

The important things in this year are: First, a perfect knowledge of the paradigms; second, some practice in reading easy connected passages in preparation for the second year's work.

Second Unit. The first four books of Cæsar's Gallic War, or selections from Cæsar equivalent in amount to those books; and the equivalent of one period a week in prose composition. Selections from other prose writers, such as Nepos, may be taken as a substitute for one book of Cæsar, or an equivalent amount may be read in any of the "second-year books," provided at least two books of Cæsar are included.

The important things in this year are: First, a systematic drill on the more common case and mode uses; second, an intelligent comprehension of the matter read. The students should be able to give a good account of any of Cæsar's campaigns.

Third Unit. Six orations of Cicero, and the equivalent of one period a week in prose composition. The orations should include the four against Catiline and the Manilian Law. Sallust's Catiline may be substituted for the Manilian Law and a sixth oration.

The important things in this year are: First, a systematic drill in all Ciceronian case and mode uses; second, an intelligent comprehension of the contents of the orations.

Fourth Unit. The first six books of Vergil's *Æneid*, and the equivalent of one period a week in prose composition. An equivalent amount of Ovid may be substituted for part of the Vergil.

The important things in this year are: First, an intelligent appreciation of Vergil's story and art; second, a training in reading the meter which will allow the student to read the Latin metrically with ease and expression; third, a study of the mythology. If the work of the first three years has been done well, syntactical drill should be confined almost wholly to the period devoted to prose composition.

Note.—When only three units are presented, it is preferred that they be the first, second, and third; but the first, second, and fourth will be accepted. No combination of Cicero and Vergil will be accepted as a unit.

Latin Prose Composition. It will be noticed that prose composition is required throughout the last three years. One period a week may be devoted to it, or a smaller amount may be given each day. Such books as Bennett's and Jones's are recommended as giving the more systematic drill, but they should be supplemented by the occasional dictation of connected passages

based on the text read. Such books as Daniell's and Moulton's will be accepted, but they need to be supplemented by a systematic study of the grammar. D'Ooge's Latin Composition is also good. If the book chosen does not give sufficient material for work in connection with Vergil, Nutting's Supplementary Latin Composition is recommended.

GREEK.

One, two, or three units.

First Unit. Elementary Greek. White's First Greek Book or Gleason's Greek Primer, or an equivalent. Thorough mastery of declensions and conjugations, and the main ideas of syntax. Xenophon's Anabasis begun, and twenty to thirty pages read. Goodwin's, Babbitt's or Goodell's Greek Grammar.

Second Unit. Xenophon's Anabasis continued into or through the fourth book, or an equivalent amount of other Attic prose. Review of inflections. Systematic study of syntax in the grammar. Practice in writing Greek based on the text read. Constant training in sight reading.

Third Unit. Homer's Iliad or Odyssey, five or six books, exclusive of the Catalogue of Ships. Constant practice in reading at sight. Special attention to Homeric forms, vocabulary, and scansion. Attic prose composition once a week. Benner's Selections from Homer's Iliad. Perrin and Seymour's School Odyssey.

GERMAN.

One, two, or three units.

First Unit. The elements of grammar (the first eighteen lessons of Carruth's Otis's Essentials of German Grammar), including: (1) Careful drill in pronunciation; (2) familiarity with German script and text; (3) the memorizing of paradigms; (4) the writing, correction, memorizing and reciting after correction of all the English-German exercises in one of these grammars; (5) colloquial exercises daily to illustrate and fix the principles and the vocabulary introduced; (6) the memorizing of 100 lines of good German (popular songs or narrative prose). One-half year.

The reading and translation of about seventy-five pages of simple German (as in Carruth, Hewett, Joynes-Meissner Readers). This reading should involve the reading aloud of the German, the rendering into good idiomatic English, and question and answer in German upon what is read. Word-for-word translation should not be permitted, save when necessary to show the precise force of an idiom. One half-year.

The above work will require, if properly done, five forty-five-minute periods weekly for thirty-five weeks. A wise plan is to begin with the grammar and carry this continuously for five or six weeks. Then introduce the reader; at first, one lesson a week, and then, after ten or twelve weeks, increasing the num-

ber of lessons from the reader until the grammar lessons have been completely and thoroughly reviewed.

Second Unit. Additional study of grammar, directed to the details of case government, use of the modal auxiliaries, of the subjunctive, and of word order. (The equivalent of lessons XIX to XXIV in Carruth's Otis's Essentials.) Practice in writing German from dictation, at least eighteen exercises (one a week for a half-year, to occupy fifteen to twenty minutes each.)

Reading and translation of 100 pages of connected prose and of Schiller's Wilhelm Tell, complete. The 100 pages of prose may be made up from the remainder of Carruth's or Hewett's Reader, together with Zshokke's Der zerbrochene Krug, Heyse's Die Blinden or Anfang und Ende, Storm's Immensee, Andersen's Maerchen, Grimm's Maerchen.

Third Unit. Review of grammar, and the completion of Carruth's Otis, lessons XXV to XXX, with drill on the less usual strong verbs and on the idioms of tense and order. Composition work, consisting chiefly of paraphrases of the German used for translation.

Reading of 400 pages of standard German, with careful translation and critical understanding. (Some portion of what is translated should always be read aloud in German.) Suitable works are: Freytag's Die Journalisten and Lessing's Minna von Barnhelm; Fouque's Undine; Hauff's Das kalte Herz; Schiller's Der dreissigjaehrige Krieg; Freytag's Doktor Luther; Riehl's Burg Neideck; Goethe's Hermann und Dorothea.

FRENCH.

One, two, or three units.

First Unit. Rudiments of grammar; conjugation of the regular and the more usual irregular verbs; modes and tenses; use and position of pronouns; partitive constructions. The equivalent of part I of Fraser and Squair's French Grammar, with the chief irregular verbs. Careful drill in pronunciation. Reading of 100 pages of easy prose, such as Lazare's Premieres Lectures or Francois's Easy Standard French. Practice in writing and speaking very simple sentences.

Second Unit. All the essentials of accidence and syntax. The equivalent of part II of Fraser and Squair's Grammar. Composition. Frequent dictation. Oral exercises. Reading of 300 to 350 pages of modern French, such as Merimee's Colomba, Sandeau's Mademoiselle de la Seigliere, Laurie's Memoires d'un Collegien.

Third Unit. Thorough review of grammar. Written exercises based upon grammatical points, and connected writing. Dictation. Practice in hearing and speaking French. Reading of 600 pages, including fairly difficult modern French by such writers as Anatole France (Le Crime de Sylvestre Bonnan), Pailleron (Le Monde on L'on S'Ennuie), Coffee, Victor Hugo, and a selection of La Fontaine's fables.

SPANISH.

One or two units.

First Unit. The essentials of elementary grammar (such as are contained in Hill's and Ford, Coester, Wagner, or similar beginners' books); conjugation of the regular and the more common irregular verbs; careful training in pronunciation; translation into Spanish, (both oral and written) of simple English sentences; translation and reading 100 pages of easy prose. (Hill's Spanish Tales for Beginners.)

Second Unit. A systematic study of grammar (such a work as Ramsey's "Textbook" is recommended); composition; frequent practice in reading aloud; oral exercises; the translation of 350 pages of modern Spanish prose, such as Goldos's *Marianela* or Padre Isla's *Lesage's Gil Blas*.

PHYSICAL GEOGRAPHY.

One unit, or one-half unit.

The course in physical geography should include a study of the following subjects:

1. The earth as a globe; shape of the earth, how proved; size, how measured; motions, how determined; map making; different modes of projection.
2. The ocean; forms and divisions; depth, density, temperature; ocean movements, waves and currents; character of ocean floor; life in ocean; tides, character and causes; shore lines.
3. The atmosphere; chemical composition, and how determined; pressure of, and how determined; circulation of, character and causes; storms, classification of, and cause.
4. Land, amount and distribution of; topographic charts; plains, kinds of, and development of; plateaus, kinds of; and development of; volcanoes, distribution and character of; rivers, life history of; glaciers, kinds and characteristics of.

PHYSICS.

One unit.

The candidate's preparation in physics should include:

1. Recitations on at least one standard text, such as Carhart's *High School Physics* or Hoadley's *A Brief Course in Physics*.
2. Experimental work, consisting of lecture-table demonstrations and individual laboratory work. The latter should comprise at least thirty exercises selected from such lists as are given in the *University High-school Manual* or in a good laboratory manual, such as that by Chester-Dean-Timmermann or that by Coleman.

CHEMISTRY.

One unit.

Preparatory work in this subject should cover practically the work done in course I in the University, and should give the student a good knowledge of (1) modern chemistry theories; (2) the most important facts of chemical science; (3) the practical applications of chemistry to every-day life and to the useful arts. It is important that elementary physics be thoroughly understood before taking up the study of chemistry. About two-fifths of the time devoted to chemistry should be spent in actual laboratory work by the students individually, as adequate training and preparation are not given merely by the instructor's performing experiments in the presence of the class. Sufficient attention should be paid to the arithmetic of chemistry so that the students will acquire facility in the handling of the simpler chemical problems. Any good textbook, such as Descriptive Chemistry, by Newell, Essentials of Chemistry, by Brownlee and others, Elementary Study of Chemistry, by McPherson and Henderson, or the state text by Hessler and Smith, may be used. Some of the abridged textbooks are too elementary to fulfill the requirements of the University.

BOTANY.

One unit.

A unit's course in botany should essentially follow the outline recommended in the Proceedings of the Seventh Annual Meeting of the North Central Association of Colleges and Secondary Schools. Detailed directions for such a course are given in Ganong's *The Teaching Botanist*, Stevens's *Introduction to Botany*, and Bergen's *Foundations of Botany*. Not less than two-thirds of the time should be devoted to laboratory work, and the remainder to recitations and discussions. Field excursions should be made, so that students may know in their natural surroundings the plants already studied in the laboratory. Careful drawings and notes should be required in connection with the laboratory work.

ZOOLOGY.

One unit.

Acceptable work in zoölogy must be of such a character that at least two-thirds of the time is spent in individual study of type specimens. The value of the study rests in the training given in independent observation and correlation of facts, and in the accurate recording of these facts by drawings and notes. Comparative work is of the greatest importance. The arthropods are the best group in Kansas upon which to work, and it is suggested that they be used to exemplify the general principles of structural relations and classifications. For a laboratory guide, Marshall and Hurst's *Practical Zoölogy* is recommended,

and as a textbook, Parker and Haswell's *Manual of Zoölogy*. Where much of the time is devoted to the study of insects, Hunter's *Elementary Studies in Insect Life* may be used as a guide, and Comstock's *Manual of Entomology* and Weed's *Life Histories of American Insects* as reference books.

PHYSIOLOGY.

One unit.

In presenting this subject, about one-half of the time should be employed in laboratory work and the remainder in recitations. To insure the best results and to cultivate the power of observation and expression, neat and correct drawings, properly labeled and accompanied by intelligent notes, should be made of each subject, demonstration or experiment studied.

Martin's *Human Body* (briefer course) or Colton's *Experimental and Descriptive Physiology* are recommended as textbooks.

GREEK AND ROMAN HISTORY.

One unit.

If four years of history are offered in the high school, it is recommended that Greek and Roman history, with some preliminary study of the earlier nations, be given in the first year; otherwise, as early as possible. In selecting a text the teacher will do well to examine Morey, West's *Ancient World*, Wulfson, Myers, and Bostford.

MEDIÆVAL AND MODERN EUROPEAN HISTORY.

One unit.

This, should, if possible, succeed the course in ancient history, and precede that in English history. If English history is not offered separately, some special stress may be laid upon it in this course. Many excellent textbooks have recently appeared on this subject. Among these are Munroe and Whitcomb, Bourne, West, Myers, and Robinson.

ENGLISH HISTORY.

One unit.

In a four-year course English history should be offered in the third year; otherwise, it should, at any rate, precede American history. There are numerous textbooks on the subject. Besides that recommended for state use, Channing and Higginson, there are Corman and Kendall, Walker, Cheyney, Wrong, Larned, Montgomery and Andrews.

Note.—In the three courses above attention should be given to geography, some outside reading, and the taking of notes. The use of outline maps to be filled in by the students is especially recommended. In all good textbooks will be found lists of reference books desirable for a school library. The Report

of the Committee of Seven should also be consulted. But the department does not urge that the division between ancient and mediæval history be fixed at 800 A. D.

AMERICAN HISTORY.

One unit.

The experience of teachers has proved that it is better to devote an entire year to American history than to attempt the combination of civics and history recommended by the Committee of Seven. In order to receive entrance credit, the course must not be given before the third year in the high school, and, unless library facilities are exceptional, should be based upon some such approved text as Channing's *Student's History*, McLaughlin's *American Nation*, or Hart's *Essentials*. The use of Hodder's *Outline Maps*, published by Ginn & Co., is recommended.

ECONOMICS.

One unit or one-half unit.

The general principles of economic science, with some of its applications. The instructor, as far as possible, should approach the subject from the concrete rather than from the abstract, and should verify every principle by practical examples. Blackmar's *Economics for High Schools* (or its equivalent) should be used as a text and guide. Special attention should be given to books II and III. In case one-half unit of entrance credit is desired, books I and II should be emphasized, and book III, on *Public Economics*, should be omitted.

A limited amount of collateral reading should be required, and easy investigations of local economic conditions are advised.

CIVICS.

One-half unit.

In response to urgent requests from many teachers, the College is prepared to give entrance credit of a half unit for civics. The work should include a knowledge of the form and functions of the national government and of state and local government in Kansas. The study should be based on some approved text like Boynton's *School Civics*.

COMMERCIAL GEOGRAPHY.

One-half unit.

Time, eighteen weeks. The work should cover the following topics: (1) The effect of the surface, soil, climate, etc., on commerce; (2) the influence of race, religion, education, commercial policies, etc., on commerce; (3) the effect of economic forces on production and commerce; (4) means of transportation and communication. These topics should be worked out in relation

to the United States, first in sections, then as a whole. This ground is covered by any good text, which should be supplemented by map work and assigned readings.

MISCELLANEOUS SUBJECTS.

The subjects under this heading for which credit will be given are enumerated in group VII. One credit each will be given for wood work, drawing, forging, music, domestic science, and domestic art, and one-half credit for each of the other subjects in the group.

Credits for above units and half units is conditioned on these units being defined by the Faculty of the College of Liberal Arts and Sciences, and entrance credit for the same will be given to the graduates of only such schools as are reported by the High-school Visitor to be fully complying with these standards.

Definitions and outlines will be furnished upon request.

ADMISSION TO ADVANCED STANDING.

The regulations governing admission to advanced standing in the College are administered by a committee of the Faculty, which examines into the merits of each case presented to it, and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

Application for such advanced standing must be made at the time of matriculation.

Undergraduates from other colleges must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Some requirements of the College are indicated as follows:

I. BY EXAMINATION. A candidate may be admitted to the Sophomore, Junior or Senior class, if he appears on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course.

All applications for examination for advanced standing must be made during the opening week of the first term. College credit will be given for work done in preparatory schools upon examination only. The times and place of such examinations are the same as listed on page 110.

II. BY CERTIFICATE. Graduates or students from the higher classes of other colleges may be admitted to advanced standing upon presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course.

It is required of all candidates for the bachelor's degree whether or not they have entered the College on advanced standing from other colleges that they do the last thirty hours of work for the degree in residence at the University.

UNCLASSSED STUDENTS.

Opportunity is given in the College for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such unclassified students is directly under the control of a committee of the Faculty, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for admission as unclassified students must present certificates from preparatory school, showing the completion of fifteen preparatory units, or must have attained the age of twenty-one years and give satisfactory evidence of proper preparation for the studies desired, and must also meet such other requirements as may be fixed by the Faculty.

No unclassified student will be admitted to the bachelor's degree. Candidates for the degree must be registered as regular students for at least one year preceding their application.

REGISTRATION.

All candidates for admission having certificates from accredited schools and all students of the College intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 14, 15 or 16, 1913. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

ENROLLMENT.

After registration has been completed with the Registrar and fees have been paid to the University Secretary, students should apply to the Dean of the College for enrollment in their classes. Enrollment the first semester occurs September 15 and 16, 1913, and on the first day of the second semester.

Each student is assigned to a member of the Faculty as his personal adviser, who will assist him in his selection of courses, the arrangement of his schedule, and any other matters upon which he may need assistance or advice. The Faculty adviser is the assistant and representative of the Dean of the College, who is charged with the execution of all rules relating to enrollment. Application for enrollment submitted at any other time than the dates above given will not be received unless accompanied by a satisfactory reason for the request.

COMPLETION OF REQUIREMENTS. A student may not be enrolled in any subject in advance of any other which he has yet to take, and which it is possible for him to carry at the time.

FAILURES AND CONDITIONS. Whenever the record of a student shows that he has failed in a course, or if he has received a condition which has not been removed during the previous semester, he must reënroll in the course, providing it appears in the schedule.

EXAMINATIONS AND REPORTS.

FINAL EXAMINATIONS are held for all students during the last week of each semester.

SPECIAL EXAMINATIONS will be given only during examination weeks and during the opening week of the fall semester. All requests for special examinations must be approved by the Dean.

DISMISSAL. Absence from examination or failure in more than one-third of his work, in any one semester, severs a student's connection with the University.

WITHDRAWALS. A student may be withdrawn from a class by the Dean, with the consent of his instructor. Honorable withdrawal will be permitted only when the student's work in the subject is of passing grade.

Whenever a student is failing in part of his work the Dean may, at his discretion, withdraw him from one or more of the classes in which he is failing and give him a failure in such subjects.

NOT EXAMINED. A student who fails to appear for final examination, but whose class standing has been of passing grade, will be reported as "not examined." If his class standing is below passing he will be reported as "failed."

GRADE ONE is used to indicate that the work of the student has been excellent in quality and performed with marked fidelity and decided interest.

GRADE TWO is used to indicate that the work of the student has been good and his application reasonable.

GRADE THREE is used to indicate that the work of the student has been fair and that his attainments are at least sufficient to prepare him to pursue the succeeding subjects in the department or subjects in other departments in any way dependent upon the subject graded.

CONDITIONS. A student may be conditioned in a subject if the quality of his work has been of passing grade and some portion of the work is for good reason unfinished. A condition may be made good by special examination, but unless properly removed before the beginning of the same semester of the following year the condition becomes a failure and the student must reënroll for the subject.

FAILURES. Any student who has not met the requirements for at least a grade three or "condition" must be marked as "not examined" or "failed." A failure may be removed only by re-enrollment in the subject.

INADEQUATE PREPARATION. When students show by their current work insufficient entrance preparation in any study they may be required to make good such deficiency in any manner prescribed by their instructors.

SCHOLARSHIPS.

The following scholarships are offered to students in College:

1. The Lucinda Smith Buchan Memorial Scholarship. Established by the alumnæ members of the Pi Beta Phi sorority. A loan of \$200 for two years without interest. Open to young women of the Junior and Senior classes of the College. Miss Jessie Miriam Smyth, of Eureka, Kan., held the scholarship for 1912-'13.

2. The Marcella Howland Memorial Scholarship. Eighty-two and one-half dollars a year. Open to young women of the Junior and Senior classes of the College. Held in 1912-'13 by Miss Fern Alice Cook, of Wellington, Kan.

3. The Frances Schlegel Carruth Scholarship in German. A Freshman scholarship of \$100, in memory of Frances Schlegel, for eight years professor of modern languages in the University of Kansas. Given to the graduate of the Lawrence high school who passes the best examination in two-years entrance German. Held in 1912-'13 by Miss Madeline Ashton, of Lawrence, Kan.

4. A research table in the Marine Biological Laboratory, at Woods Hole, Mass., supported by Mrs. Sara T. D. Robinson. Open to women of the University who have specialized in the sciences and given evidence that they are fitted to make the best use of it. Held in 1912-'13 by Miss Irma Goldman, of Kansas City, Mo.

5. The Women Student Government Scholarships. Three of \$100 each. Two held in 1912-'13 by Miss Minnie V. Sandberg, of Kansas City, Mo., and Miss Bernice Huff, of Chapman, Kan.

6. The Eliza Matheson Memorial Scholarship of \$100, open to women students of the College above the Freshman year, or to women students in the Graduate School. Held in 1912-'13 by Miss Adella Morris Pepper, of Kansas City, Mo.

7. The Charles S. Griffin Memorial Scholarship for young men of the Sophomore class of the College.

8. Aid Fund for Women Students. A fund established for the assistance of worthy women students.

The Mrs. J. B. Watkins Scholarship. Held in 1912-'13 by Miss Sidonia A. McDaniels, of Lawrence, Kan.

The Daughters of the American Revolution Scholarship. Held in 1912-'13 by Miss Bonnie D. Bailey, of Lawrence, Kan.

The Association Collegiate Alumni Scholarship. Held in 1912-'13 by Miss Bonnie D. Bailey, of Lawrence, Kan.

The Caroline Mumford Winston Memorial Scholarship. Held in 1912-'13 by Miss Elizabeth Hodgson, of Wichita, Kan.

PRIZE ESSAYS IN APPLIED CHRISTIANITY.

Four prizes are offered for the best essays in the application of the teachings and example of Christ by the individual and by society to the problems of modern life. The prizes are as follows: First prize, \$100; second prize, \$75; third prize, \$50; fourth prize, \$25. The essay winning the first prize is also to be printed at the expense of the University, if thus recommended by the committee. Essays must be submitted by May 15, and the award is made by a committee of five outside the Faculty.

MEMORIAL FUND.

May Sexton Agnew Memorial Fund. A fund of \$500 has been given the library of the University by the Kappa chapter of Kappa Alpha Theta fraternity. The income of this fund is to be devoted to the purchase of books in English literature.

FEES AND EXPENSES.

For information regarding fees and expenses in The College, see page 54 of this catalogue.

PROGRAM OF STUDIES IN THE COLLEGE.

Leading to the Degree of Bachelor of Arts.

WORK REQUIRED FOR GRADUATION.

In order to receive the degree of bachelor of arts from the College of Liberal Arts and Sciences, a student must satisfy the following requirements: He must complete 120 hours of class work; in the first term of his Freshman year he must spend two hours a week in the gymnasium, in the second term, three hours a week, and throughout his Sophomore year, two hours a week; and in the first semester of his Freshman year he must attend a weekly lecture in hygiene.

REGULATIONS GOVERNING THE ELECTION OF COURSES.

The courses from which the candidate for the degree must make his selection are listed on page 134 *et seq.* of this catalogue. They are divided into nine groups, according to the departments by which they are given. These groups are as follows:

GROUPS OF DEPARTMENTS OFFERING COURSES IN THE COLLEGE.

<i>Group.</i>	<i>Department.</i>
I. <i>English.</i>	English language and literature. Journalism. Public speaking.
II. <i>Ancient Language.</i>	Greek language and literature. Latin language and literature.
III. <i>Modern Language.</i>	Germanic languages and literatures. Romance languages and literatures.
IV. <i>Mathematics.</i>	Mathematics.
V. <i>Physical Science.</i>	Chemistry. Physics and astronomy. Geology and mineralogy.
VI. <i>Biological Science.</i>	Botany. Zoölogy. Entomology. Physiology.
VII. <i>History.</i>	History and political science. Sociology. Economics.
VIII. <i>Philosophy.</i>	Philosophy. Design. Music.
IX. <i>Miscellaneous.</i>	Home economics. Physical education.

<i>Group.</i>	<i>Department.</i>
X. <i>Professional.</i>	Law (fifteen hours, open to College Seniors).
	Medicine (twenty-five hours, open to College Seniors).
	Engineering (fifteen hours, open to College students).
	Education (fifteen hours, open to College Juniors and Seniors).
	Fine arts (fifteen hours, open to College Juniors and Seniors).

In the choice of courses from these groups the student must conform to the following regulations:

FRESHMAN-SOPHOMORE REQUIREMENTS.

Before the beginning of the Junior year the student must have completed sixty hours, chosen from the list of courses open to Freshmen and Sophomores in accordance with the following regulations:

1. At least five hours must be taken from each of six of the first eight groups.
2. Not more than twenty hours may be taken in one department.
3. Rhetoric, five hours, must be taken by all Freshmen not offering it as a fourth year of entrance English. Credits for rhetoric are given provisionally. (See announcement of the course.)

MAJOR COURSE.

Before graduation the student must complete a major course of not less than thirty hours nor more than sixty hours in one group. Not less than twenty hours nor more than forty hours of his major course may be taken in one department. Notice of the major group chosen must be filed with the Dean at the beginning of the Junior year.

FREE ELECTIVES.

The work required for graduation not included in the major course is to be chosen subject to the restriction that not more than thirty hours may be elected in one group.

NUMBER OF HOURS PERMITTED IN ONE GROUP AT ONE TIME.

Not more than ten hours may be carried in one group at one time.

DUPLICATION OF SUBJECTS.

A course may not be chosen which substantially duplicates work for which credit has already been granted, either in the College or the preparatory school.

RESPONSIBILITY.

The individual student will be held responsible for the election of his courses in conformity with the preceding regulations.

AMOUNT OF WORK TO BE CARRIED AT ONE TIME.

Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work, but all applications for enrollment are subject to the approval of the Dean.

When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrollment to such extent as may be considered advisable in his case.

The Faculty urges students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of this undergraduate work. Experience has shown that the crowding of the undergraduate course results in serious loss in the quality of the work accomplished.

COLLEGE CREDIT FOR PROFESSIONAL COURSES.

Juniors and Seniors in the College are permitted to enroll in certain courses offered in the professional schools and count the credit received for such work towards the bachelor of arts degree, *but no student is permitted to offer credit from more than one professional school.* The amount of credit that may be thus used is subject to the limitations indicated below. Students desiring to avail themselves of this opportunity must register in the professional school as well as the College, but in enrollment the regulations of the College Faculty governing quantity and character of courses elected must be observed.

SCHOOL OF MEDICINE.

Juniors and Seniors in the College may offer twenty-five hours from the curriculum of the School of Medicine not included in the courses which are also offered in the College.

SCHOOL OF LAW.

Seniors in the College may offer fifteen hours from the first year of the curriculum of the School of Law.

SCHOOL OF EDUCATION.

Juniors and Seniors in the College may be enrolled in not to exceed fifteen hours of work in the School of Education.

SCHOOL OF ENGINEERING.

A maximum of fifteen hours may be elected by the College student from courses offered in the School of Engineering.

SCHOOL OF FINE ARTS.

Juniors and Seniors in the College may be enrolled in not to exceed fifteen hours of work in the School of Fine Arts.

COURSES OPEN TO FRESHMEN AND SOPHOMORES.

GROUP I.—*English.*

English language and literature.

FIRST SEMESTER:

Nos. 1**, 10, 12a*, 12b*, 14*.

SECOND SEMESTER:

Nos. 2**, 11, 13a*, 13b*, 15*.

Journalism.

FIRST SEMESTER:

No. 1*.

SECOND SEMESTER:

No. 2*.

Public speaking.

FIRST SEMESTER:

No. 1*.

SECOND SEMESTER:

Nos. 1*, 2*.

GROUP II.—*Ancient Language and Literature.*

Greek language and literature.

FIRST SEMESTER:

Nos. 1, 3, 4, 7, 8.

SECOND SEMESTER:

Nos. 2, 5, 6, 9, 10.

Latin language and literature.

FIRST SEMESTER:

Nos. 1, 3, 4, 5, 6, 7, 9, 10.

SECOND SEMESTER:

Nos. 2, 4, 5, 6, 7, 8, 11, 12, 13.

GROUP III.—*Modern Language.*

Germanic languages and literatures.

FIRST SEMESTER:

Nos. 1, 2, 3, 4, 5, 10, 11, 13, 15, 16.

SECOND SEMESTER:

Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 17.

Romance languages and literatures.

FIRST SEMESTER:

French, 1, 2, 3, 4, 6, 8, 10, 11.

Spanish, 1, 2, 3, 4.

Italian, 1, 3.

SECOND SEMESTER:

French, 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12.

Spanish, 1, 2, 3, 5, 6, 7.

Italian, 2, 4.

GROUP IV.—*Mathematics.*

Mathematics.

FIRST SEMESTER:

Nos. 2, 3, 4, 5, 6, 7.

SECOND SEMESTER:

Nos. 2, 3, 4, 5, 6, 7, 8*, 9*.

GROUP V.—*Physical Science.*

Chemistry.

FIRST SEMESTER:

Nos. 1, 2, 4*.

SECOND SEMESTER:

Nos. 1, 3*, 4*.

** Required of Freshmen.

* Reserved for Sophomores.

GROUP V.—*Physical Science—continued.*

Physics and astronomy.

FIRST SEMESTER:

Nos. 1, 6a, 6b, 10, 11*.

SECOND SEMESTER:

Nos. 5a, 5b.

Geology and mineralogy.

FIRST SEMESTER:

No. 1*.

SECOND SEMESTER:

Nos. 1*, 2*.

GROUP VI.—*Biological Science.*

Botany and bacteriology.

FIRST SEMESTER:

Nos. 1, 4, 10*.

SECOND SEMESTER:

Nos. 1, 2, 3.

Zoölogy.

FIRST SEMESTER:

No. 1.

SECOND SEMESTER:

Nos. 2a, 2b, 3.

Physiology.

FIRST SEMESTER:

Nos. 1, 2*.

SECOND SEMESTER:

Nos. 1, 2*.

Entomology.

FIRST SEMESTER:

No. 1*.

SECOND SEMESTER:

No. 1*.

GROUP VII.—*History.*

History.

FIRST SEMESTER:

Nos. 1, 3a, 3b, 5*, 7a, 7b.

SECOND SEMESTER:

Nos. 2, 4a, 4b, 6*, 8a, 8b,

Political science.

FIRST SEMESTER:

No. 10*.

SECOND SEMESTER:

No. 10*.

Economics.

FIRST SEMESTER:

Nos. 1, 2.

SECOND SEMESTER:

Nos. 1, 3, 4.

GROUP VIII.—*Philosophy.*

Philosophy.

FIRST SEMESTER:

Nos. 1*, 2*, 3*, 4*.

SECOND SEMESTER:

Nos. 1*, 2*, 3*, 4*.

GROUP IX.—*Miscellaneous.*

Home economics.

FIRST SEMESTER:

Nos. 1a, 1b.

SECOND SEMESTER:

Nos. 1a, 1b.

PRELIMINARY EXPLANATION.

NUMBERS OF COURSES.

Courses with numbers from 1 to 49 are open to Freshmen and Sophomores; courses marked with an asterisk (*) are reserved for Sophomores; courses marked with a double asterisk (**) are required of Freshmen.

Courses with numbers from 50 to 99 are open to Juniors and Seniors on the conditions stated in each case. Many of these courses are also open to graduate students; these are listed under The Graduate School, with the same numbers increased by 100. See pages 72 *et seq.*

DAYS OF MEETING.

Courses giving five hours' credit meet daily from Monday to Friday, inclusive.

Three-hour courses meet on Monday, Wednesday and Friday unless otherwise specified.

Two-hour courses meet on Tuesday and Thursday unless otherwise specified.

DESCRIPTION OF COURSES IN THE COLLEGE.

ASTRONOMY. (See Physics.)

BOTANY AND BACTERIOLOGY.

Professor W. C. STEVENS.
 Associate Professor BILLINGS.
 Assistant Professor STERLING.
 Assistant Professor SHULL.
 Miss CHARLES, Instructor.
 Mr. SHERWOOD, Instructor.
 Mr. CLAWSON, Instructor.
 Mr. YOUNG, Director of Water Survey.
 Miss GREENFIELD, Assistant in Water Analysis.

EQUIPMENT. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, a good herbarium for reference in taxonomy, sets of morphological slides for each student, and abundant morphological material, and equipment for carrying on bacteriological research and instruction according to the best methods. There is a departmental library adjoining the laboratories.

ADVICE AS TO CHOICE OF COURSES. Students who are preparing to teach botany should take courses 1, 2, 3, 4, 50, 60, 52, and bacteriology 1. Courses 1 in botany and 10 in bacteriology afford a good basis for sanitation. Courses 3, 60 and 52 are fundamental to scientific plant culture. Botany 1 and 4 and bacteriology 10 would be especially useful to students in domestic science.

Botany.

1.—GENERAL MORPHOLOGY OF PLANTS. Five hours, both semesters; first semester at 10:15 to 12:15 and at 1:30 to 3:30; second semester at 10:15 to 12:15. A general survey of the great groups of plants. Lectures, recitations, and laboratory study of types, showing the important steps in the evolution of the plant kingdom. Charles.

2.—GENERAL BOTANY. Five hours, second semester, 8 to 10, and 1:30 to 3:30. An introduction to the morphology, physiology and ecology of plants. Open to students who do not offer botany for entrance to College. Stevens and Sterling.

3.—PLANT PHYSIOLOGY. Five hours, second semester, 10:15 to 12:15. The physiological activities of plants. Laboratory work, recitations and conferences, ten hours a week. Prerequisite, course 1 or its equivalent, or 2. Shull.

4.—PLANT HISTOLOGY. Five hours, first semester, 8 to 10. A study of plant tissues with special reference to their development and functions; plant products, their origin and physiolog-

ical and biological significance; histological technique. Laboratory work, recitations and lectures. Prerequisite, course 1 or its equivalent, or 2. Stevens.

50.—TAXONOMY OF SPERMATOPHYTES. Five hours, first semester, 8 to 10. Classification of flowering plants, with special attention to the local flora. Prerequisite, course 1 or 2. Charles.

52.—PLANT GENETICS. Five hours, second semester, 8 to 10. Variation and heredity. The practice and principles of plant improvement. Prerequisite, courses 1 or 2, and 3. Desirable antecedent, course 60. Shull.

53.—PLANT PHYSICS. Five hours, first semester, 1:30 to 3:30. An advanced course dealing with recent advances in our knowledge of those phases of the plant's activities which are essentially physical. Laboratory work ten hours per week. Open to Seniors and graduates only. Prerequisites, courses 1 or 2, and 3, and physics 1, or equivalent. Recommended antecedents, physics 6a and 6b. Shull.

54.—PLANT CHEMICS. Five hours, second semester, 1:30 to 3:30. A continuation of plant physics, dealing with the chemical processes of vegetable metabolism. Laboratory work ten hours a week. Prerequisites, plant physics, and chemistry 2 and 4. Recommended antecedent, pharmacy 50. Shull.

55.—MORPHOLOGY OF THALLOPHYTES. Three or five hours. Second semester, by appointment. An advanced course on the algæ and fungi, with particular attention to their evolution and life histories. Prerequisite, course 1. Charles.

56.—MORPHOLOGY OF FUNGI. Three hours, second semester, 1:30 to 3:30. Lectures and laboratory work on the structure and life histories of fungi causing plant diseases. Prerequisite, course 1. Charles.

57.—MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. Three hours, both semesters, by appointment. An advanced course on the development and classification of plants of the groups. Prerequisite, course 1. Charles.

58.—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. Five hours, first or second semester, or both, by appointment. A study of the forms and structure of plant members under varying environments. Laboratory work, field work and reading. Stevens.

59.—ORGANIC EVOLUTION. Three hours, second semester, at 9. This course will present the theory of evolution historically and in the light of recent important evidence derived from observation and experiment. Lectures, collateral reading and recitations. Stevens and Robertson.

60.—ECONOMIC PLANTS AND ANIMALS. Five hours, first semester, 8 to 10. A course intended to give the University student as part of his general training and culture a knowledge and an appreciation of the basic industry of the state. Laboratory, lectures, conferences and field trips, ten hours a week. Prerequisite, course 3 or Zoölogy I. Shull and Hungerford.

Bacteriology.

EQUIPMENT. A general laboratory, with adjoining preparation room and storeroom, is used by students in bacteriology. The laboratory is provided with lockers, an ice chest for the storing of media, and tables provided with gas. The preparation room contains the incubators, sterilizers, and reagents. A compound microscope with high-power oil-immersion lens, a set of stains, glassware and other apparatus, are allotted each student.

ADVICE AS TO CHOICE OF COURSES. Course 1 is a prerequisite for all other courses in bacteriology except 52. It is directly concerned with biology in its application to human problems in the various departments of life, and hence is recommended to prepared students desiring broad culture as well as to those pursuing biological subjects more specifically. Students wishing the practical application of bacteriology to public health and sanitation should take courses 50, 51, 52 and 53. Courses 50 and 51 are preparatory for practical work in a public health laboratory.

10.—GENERAL BACTERIOLOGY.* Five hours, both semesters; first semester, 10:15 to 12:15; second semester, 1:30 to 3:30. The course is designed to lay a foundation in the principles underlying the study of microorganisms. It deals with the preparation of media, cultural and staining methods, diagnostic tests, and the examination of bacteria that have a more or less intimate relation to every-day life. It is intended to meet the requirements of students desiring biological work with a distinct practical trend, and of those studying home economics. Prerequisites, chemistry 1 or its equivalent and any one of the following: botany 1, 2 or 4, zoölogy 2, or physiology 1 or 2. Billings and Clawson.

50.—BACTERIOLOGY OF MILK AND WATER. Five hours, second semester, 1:30 to 3:30. Laboratory work, with recitations, ten hours per week. (a) Milk-testing; relation of bacteria to milk and its products. (b) Bacteriological examination of water. Prerequisite, course 1. Clawson.

51.—SPECIAL METHODS IN BACTERIOLOGY AND SEROLOGY. Three hours, first semester, 1:30 to 3:30. Laboratory studies, lectures and readings on immunity, public health, laboratory methods and advanced bacteriological technic. Sherwood.

52.—MICROBIOLOGY AND PUBLIC HEALTH. One hour, second semester, Tuesdays, at 9. A course of illustrated lectures dealing with the relationship of microorganisms to public health problems. Billings.

53.—WATER ANALYSIS. Five hours, both semesters, 8 to 10. Lectures, recitations and laboratory work, ten hours a week. The first part of each semester will be devoted to general bacteriological technic, followed by examination of water and sewage. The remainder of the time will be spent in quantitative chemical analysis of water and sewage, and on the proper inter-

pretation of sanitary tests. Prerequisite, chemistry 3. (See Engineering 50E.) Young.

54.—BACTERIOLOGICAL JOURNALS. One hour, first semester, Monday at 3:30. Reviews and discussions of current bacteriological literature. Billings.

55.—PROBLEMS IN BACTERIOLOGY. Three, five or ten hours either semester, by appointment. Special work along some definite line with a view of obtaining familiarity with a specific kind of laboratory procedure. Billings.

CHEMISTRY.

Professor BAILEY.
 Professor CADY.
 Associate Professor DAINS.
 Associate Professor WHITAKER.
 Assistant Professor ALLEN.
 Assistant Professor JACKSON.*
 Assistant Professor YOUNG.
 Assistant Professor STRATTON.
 Assistant Professor HARDER.
 Mr. BEATH, Instructor.
 Mr. RODEBUSH, Instructor.
 Mr. GRIFFIN, Instructor.
 Mr. LICHTENWALTER, Instructor.
 Mr. BAILEY, Assistant Instructor.
 Mr. BRUCKMILLER,† Laboratory Assistant.
 Mr. MYERS, Laboratory Assistant.
 Miss ANDERSON, Laboratory Assistant.

EQUIPMENT.—The Chemistry Building was completed in 1900. The laboratories are equipped with gas, water and compressed air. There are balance rooms on each floor, storerooms and instructors' rooms conveniently located. There are several large laboratories, one of which accommodates 280 students, another 144 students; the quantitative laboratory accommodates 80 and the organic 144. The largest lecture room seats over 300. There are in the building in use by the chemistry department eleven large laboratories and recitation rooms, twelve small laboratories and balance rooms, and five offices, thirty-nine rooms in all. Special attention has been paid to ventilation, which is accomplished by means of a fan blower forcing air into the laboratories, and hoods between all the windows to carry off injurious fumes. In the basement is a liquid-air plant, an assay laboratory, a metallurgical laboratory, and the industrial research laboratories.

The department is well supplied with all the necessary and usual apparatus for lecture illustration and demonstration, for laboratory work in the undergraduate courses, together with adequate equipment for effective research work in physical, organic, inorganic, analytical, industrial and metallurgical chemistry. The liquid-air plant offers somewhat unusual opportunities for investigations at low temperatures.

Work of the State Board of Health is carried on in a well-equipped food laboratory, and two water-survey laboratories, one for mineral analysis and the other for sanitary water analysis.

* Resigned.

† On leave of absence.

ADVICE AS TO CHOICE OF COURSES. Students desiring to become professional chemists should select courses 1, 2, 3, 4, 54, 61 and 65. The remainder of the possible forty hours in chemistry should be devoted to the subject or subjects which will best fit them for their chosen work.

Those desiring to teach should select not less than twenty-five hours, which should include courses 1, 2, 3, 4, 52 and 53.

For business or general culture, or as a foundation work for medicine, botany, zoölogy, geology, mineralogy or physics, at least chemistry 1, 2 and 4 should be studied.

The department will gladly confer with students majoring in chemistry and advise them as to choice of courses best adapted to individual needs.

1.—ELEMENTARY CHEMISTRY. Five hours, first semester, 1:30 to 3:30; second semester, 10:15 to 12:15. Recitations, lectures and laboratory work. Stratton and assistants. Students presenting chemistry for admission to the College are not admitted to this course for credit.

2.—INORGANIC CHEMISTRY. Five hours, first semester. Lecture, Monday, at 8; recitations, Wednesday and Friday, at 8 or 9. Laboratory, Tuesday and Thursday, 8 to 10 or 1:30 to 3:30. Prerequisites, course 1. Cady and assistants.

3.—QUALITATIVE ANALYSIS I.* Five hours, second semester. Lectures and recitations, Tuesday and Thursday, 8 or 9. Laboratory, Monday, Wednesday and Friday, 8 to 10, or 1:30 to 3:30. Prerequisite, course 2. Cady and assistants.

4.—ORGANIC CHEMISTRY.* (a) A five-hour course, both semesters, 1:30 to 3:30. Prerequisite, ten hours' chemistry. Open to College and medical students. Dains.

(b) A five-hour course, first semester, 10 to 12. Open only to students intending to prepare for home economics. Prerequisite, chemistry 1. Bailey.

(c) A five-hour course, first semester, by appointment. For College and engineering students who wish a more detailed knowledge of organic chemistry. In this course the aliphatic series only is discussed, the aromatic series being reserved for organic chemistry 2, for which it is a prerequisite. Dains.

50.—QUALITATIVE ANALYSIS II. Three hours, second semester, 8 to 10. An advanced course, especially on the rare metals. Prerequisite, course 3. Cady.

51.—INORGANIC INDUSTRIAL CHEMISTRY. Three hours, second semester, at 11:15. A study of the inorganic industries, including such topics as the manufacture of acids, alkalies and other chemicals, fertilizers, paints and pigments, glass and cement, and the purification of water. Prerequisite, courses 1, 2, 3. Whitaker.

52.—ORGANIC INDUSTRIAL CHEMISTRY. Two hours, first semester, at 9. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisite, courses 1, 2, 3. Whitaker.

53.—CHEMISTRY AND PHYSIOLOGY OF FOODS. Three hours, second semester, 3:30 to 5:30. A study of food supply, its composition, preparation and adulteration. Lectures, recitations and laboratory work. Bailey's Sanitary and Applied Chemistry, part II. Prerequisite, course 1. Bailey.

54.—QUANTITATIVE ANALYSIS I. Five hours, first semester, 10:15 to 12:15, or 3:30 to 5:30; or second semester, 10:15 to 12:15, or 1:30 to 3:30. Prerequisite, course 3. Allen and assistants.

55.—QUANTITATIVE ANALYSIS II. Two, three, or five hours, either semester, 1:30 to 3:30, or by appointment. Prerequisite, course 54. In connection with this work some specialty, such as chemistry of the cement industry, of the glass industry, of the packing-house industry, sugar chemistry, iron analysis, gas analysis, or rock analysis, can be pursued. Allen.

56.—SANITARY WATER ANALYSIS. Five hours, both semesters, 8 to 10. Part of the course will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the course will be spent in chemical quantitative analysis of water and sewage, and interpretation of results of sanitary tests. Prerequisite, chemistry 3. Young.

57.—ASSAYING AND METALLURGICAL ANALYSIS. Three or five hours, second semester, 3:30 to 5:30. The three-hour course will cover the fire assay of gold, silver, copper and other metals. If a student has not taken course 55 he may profitably supplement the fire assaying with two hours' work on the volumetric assay of ore and furnace products. Whitaker.

58.—FOOD ANALYSIS. Four hours, both semesters, by appointment. Must be preceded by courses 1, 2, 3 and 54. Jackson.

60.—ORGANIC CHEMISTRY II. A continuation of course 4c. Five hours, second semester, 3:30 to 5:30. In this course the aromatic and other cyclic compounds are discussed. Dains.

61.—METALLURGY I. Five hours, first semester, at 9. Three hours of classroom work on general metallurgy, the metallurgy of iron and steel, and two hours of laboratory work. Prerequisite, course 3. Whitaker.

62.—METALLURGY II. Three hours, second semester, at 9. The metallurgy of lead, zinc and copper, followed by that of silver, gold, mercury and tin. Prerequisite, course 3. Whitaker.

63.—METALLURGICAL LABORATORY. Two hours, first semester, by appointment. This course includes high-temperature measurements, calorimetry, preparation of silicates and alloys, study of roasting, reduction, oxidation, amalgamation, chlorination, cyaniding, and leaching. Prerequisite, course 61 or 62. Whitaker.

64.—PHYSICAL CHEMISTRY I. Five hours, first semester, at 10:15. A course paying special attention to electrochemistry. Lectures, recitations and laboratory work. Prerequisites, course 3 and general physics and calculus. Cady.

65.—PHYSICAL CHEMISTRY II. Five hours, second semester, at 10:15. A general course in theoretical and physical chemistry. Lectures, recitations and laboratory work. Prerequisites, courses 1, 2, 3, 4, 54, general physics and calculus. Cady.

66.—TOXICOLOGY. One hour, second semester, at 11:15. A discussion of the sources, properties, methods of detection, *post-mortem* appearances, fatal doses and method of treatment in case of inorganic or organic poisons. Lectures and examinations. Prerequisite, fifteen hours of chemistry. Bailey.

DESIGN.

Professor GRIFFITH.
Miss BENSON, Instructor.

EQUIPMENT.—In the fall of 1911 the studios of the department of design were moved into the rooms provided for them in the first wing of the new Administration Building. They are well equipped, with many casts from the antique, books and plates upon the theory and history of ornamental design, printing presses, a potter's wheel and easels. The classical museum and the museum of natural history offer an abundance of material for the use of students in design. Kilns are available for the firing of pottery, and the equipment of Fowler Shops for the work in wood and metal.

ADVICE AS TO CHOICE OF COURSES.—The following courses are optional. Technical students to whom some drawing is essential are advised to take course 50. Students wishing training in artistic perception and graphic expression for its general culture value should take course 50, followed by 52 and 54.

50.—FREE-HAND DRAWING. Three hours, both semesters, 8 to 10. Drawing with pencil and charcoal from the cast and objects of still life, which aims to teach the student to construct form in a simple and correct manner; drawing with pen and ink and water colors for illustrative and reproductive processes. Griffith.

51.—FREE-HAND DRAWING. Three hours, both semesters, 8 to 10. A continuation of course 50. Griffith.

52.—PRINCIPLES OF ART. Two hours, first semester, at 11:15. A lecture course on the theory of the technical beauties of a work of art, presenting the principles of composition and perspective, together with a consideration of technical processes. The object of the course is to give the student a critical knowledge necessary to understand and more fully enjoy a work of art. Griffith.

54.—DESIGN I. Three hours, both semesters, at 10:15. The anatomy of pattern and the planning of ornament. Prerequisite, course 50. Benson.

55.—DESIGN II. Three hours, both semesters, at 8. The application of design. Prerequisite, course 54. Benson.

56.—APPLIED DESIGN I. One hour, one semester, five hours per week, by appointment. Must be preceded by courses 54 and 55. The application of design in the art of wood carving, inlaying, beaten metal, cast metal, etching, chasing and enameling on brass, copper and silver.

57.—APPLIED DESIGN II. One hour, one semester, five hours per week, by appointment. A continuation of course 56 and the making of jewelry.

58.—HISTORY OF DESIGN. Two hours, first semester, at 10:15. Prerequisite, course 57. Griffith.

For other courses in drawing, see School of Fine Arts and School of Education.

ECONOMICS.

Professor MILLIS.
Associate Professor BOYNTON.
Assistant Professor PUTNAM.
Assistant Professor ———.

EQUIPMENT.—Instruction in the department of economics is conducted chiefly by lectures, and reading and investigation in the library, aided in the elementary courses by textbooks. The University library contains about 2500 volumes relating to the courses of instruction, and a fair collection of special reports and documents for research work. All of the principal economic journals are on file in the reading rooms for the use of students. In addition, there are charts, maps, and outlines. A limited amount of investigation of social and economic conditions is carried on.

ADVICE AS TO COURSES.—Economics 1 is an essential foundation for and a prerequisite to all subsequent courses in economics. Economics 2 and 3 lay a foundation for nearly all of the courses given in the College and should be taken by all who expect to take more than a few units in the department.

It is very desirable that students should consult with one of the instructors before choosing a group of studies in the department, as there are fairly distinct lines of work, such as economic theory, economic history, commerce, transportation and finance, taxation, social economics, besides courses in applied economics.

Students who are looking forward to a business career will find in courses here offered a line of study especially adapted for business training. It is in such courses that the forces and laws controlling the business world are best illustrated and grasped by the future man of business. Those who expect to enter the public or social service, or later to study law, will find a line of study equally well adapted to their purposes.

1.—ELEMENTS OF ECONOMICS. Three hours, first semester, at 9, 10:15, 11:15, and 2:30; second semester, at 9, 10:15, and 2:30. This course is essentially a concrete analytical study of the laws governing man in his relation to wealth. It not only furnishes the basis for the scientific understanding of economic affairs, but serves as a foundation for all other courses in economics. Not open to Juniors and Seniors without the consent of the instructor. (See 90.) Putnam, ———.

2.—ECONOMIC HISTORY OF ENGLAND. Three hours, first semester, at 9. A study of the general development of agriculture, industry and commerce in England. The period covered

extends from the Saxon invasion to the present time. Special attention is given to early agriculture, early town life, merchant and craft guilds and other corporate privileges, and the rise of commerce, trade routes, markets and fairs. Prerequisite, course 1. Boynton.

3.—ECONOMIC HISTORY OF THE UNITED STATES. Three hours, second semester, at 9. Attention is given to colonial agriculture, industry, and trade. The effect upon American life of the westward expansion, the economic significance of slavery in the South and in the country at large, the industrial development of the North prior to the Civil War, and the resources of the nation and the rise and importance of American manufactures will receive due attention. Banking, finance, transportation and the tariff form a part of the course. A survey will be made of the present industrial situation under corporate methods and of the outlook for democratic control of industrial conditions. Prerequisite, course 1. Boynton.

50.—MONEY AND CREDIT. Three hours, first semester, at 10:15. The principal forms of money and of credit, as developed in the experience of the principal countries, and as at present in use in various parts of the world, are studied. Prerequisite, course 1. Boynton.

51.—BANKING. Three hours, second semester, at 10:15. The principles of banking are studied, and also the principal banking systems, both as to the historical steps in their development and as to their present forms and methods in different countries. Prerequisite, course 50. Boynton.

52.—INVESTMENTS. Two hours, second semester, at 11:15. A study of the various fields of investment, including railway, mining and industrial securities, and the bonds of governments and municipalities. The various forms of stocks, bonds, mortgages, etc., the elements of security and of risk involved in investments, and the modern institutions conducting this business, such as the stock exchanges, brokerage firms, banks and trust companies, insurance and investment companies, will constitute the principal features of the course, and its aim will be to determine, so far as possible, the elements of a wise and conservative investment. Prerequisite, course 1. Boynton.

53.—ACCOUNTING. Two hours, first semester, at 8. The object of this course is to develop the economic principles underlying the so-called higher accounting, which aims to give at all times a true and complete, but condensed, representation of the real condition of the particular business to which it is applied. Prerequisite, course 1. ———

54.—BUSINESS ORGANIZATION AND MANAGEMENT. Two hours. This course treats of general business organization and management, as well as the organization of the business of the bank, the factory, and the general office. The organization and working of the industrial and commercial corporation is given special consideration. (Not given in 1913-'14.)

55.—HISTORY AND DEVELOPMENT OF TRANSPORTATION. Two hours, first semester, at 11:15. Methods of transportation;

their economic aspects. The historical development of the canal and the railway. Special attention to the United States. This course is designed as preparation, in part, for course 56. Prerequisite, course 1. Should be preceded by course 3. Boynton. (Not given in 1913-'14.)

56.—RAILWAY RATES AND GOVERNMENT REGULATION. Three hours, first semester, at 11:15. A study of the theory of railway rates, competition in transportation, and the problems of local and individual discrimination. The experience of state railway commissions and the work of the Interstate Commerce Commission, and the efforts by recent legislation, state and national, to deal with the problems arising in connection with transportation. Prerequisite, course 1. Boynton.

57.—CORPORATION ECONOMICS. Two hours, first semester, at 10:15. The aim of this course is to acquaint the student with the economic forces which have operated to bring about large scale enterprises. The following are the leading topics studied: Modern forms of business organization; incorporation and regulation of companies; economics of combination; pools, trusts and holding companies; introduction to corporation finance—the issue and sale of securities. Prerequisite, course 1. Putnam.

58.—CORPORATION FINANCE. Two hours, second semester, at 10:15. A continuation of course 57, dealing with the financial side of large corporations. Profits, dividends and surplus; analysis of corporation reports; manipulation of finances; overcapitalization; insolvency and receiverships; principles of reorganization. Must be preceded by course 57. Putnam.

59.—INSURANCE. Two hours, first semester, at 9. Special attention is given to the organized business of life insurance. Other kinds of insurance are investigated only with a view to laying a foundation for the general application of the insurance principle. The following topics constitute the subject matter of the course: The general economic nature of risk; kinds of insurance; theory of life insurance; calculation of premiums; evolution and organization of companies; policies; reserve, surplus and dividends; selection of lives; investment of funds; relation of the state to insurance. Prerequisite, course 1. Putnam.

60.—PUBLIC FINANCE. Three hours, first semester, at 8. A general course, dealing with the nature and growth of public expenditures, revenues, and public debts, special attention being given to the theory and practice of taxation. Prerequisite, course 1. Millis.

61.—AMERICAN METHODS OF TAXATION. Three hours, second semester, at 8. A study of (a) the federal and (b) the state and local systems of taxation. In the study of the federal system, special attention is given to tariff reform and the income tax. In the study of state and local taxation, special attention is given to the problems presented in Kansas. Prerequisite, either course 60 or 62. Millis.

62.—FINANCIAL HISTORY OF THE UNITED STATES. Two hours, first semester, at 10:15. This course deals with the revenues, expenditures and debt of the United States. Special attention is given to tariff history and to the growth of public expenditures since the Civil War. Prerequisite, course 1. Millis.

70.—LABOR PROBLEMS: TRADE-UNIONS. Three hours, first semester, at 9. After an introduction to the labor problem, the history, assumptions, policies and practices of trade-unions are studied with special reference to the United States. Prerequisite, course 1. Millis.

71.—LABOR PROBLEMS: THE STATE IN RELATION TO LABOR. Three hours, second semester, at 9. A continuation of course 70. The leading topics studied are: Industrial disputes and voluntary and compulsory arbitration; the distribution of incomes and the minimum and the living wage; industrial accidents, employer's liability, workmen's compensation, accident insurance, and accident prevention; occupational disease; old-age pensions; unemployment and its remedies; the labor of women and children. These and related subjects are studied with reference to American conditions. Millis.

72.—IMMIGRATION PROBLEM. Two hours. The history of immigration to the United States and its causes, the geographical and occupational distribution of the foreign born, the economic effects of immigration, its effect on dependency, crime, etc, and social and political institutions, the problem of assimilation, and a proper immigration policy, are the principal topics studied. Prerequisite, course 1. Millis. (Not given in 1913-'14.)

73.—STATISTICS. Two hours, second semester, at 11:15. This course is designed to give the student a knowledge of the elements of statistical method and the scope and meaning of statistical inquiry. Moreover, a practical knowledge is derived from the handling of statistical data and from the preparation of statistical tables, tabulations, diagrams, etc. These objects of the course are accomplished mainly by studying present economic problems from the statistical point of view. Prerequisite, course 1. ———

80.—ECONOMICS OF AGRICULTURE. Two hours, second semester, at 9. The principal topics studied are: Systems of agriculture; organization of the productive factors; size of farms; crop statistics; marketing of farm products; land values, rent and taxation in their special bearing on agricultural land; rural population, tenancy and landlordship. Special attention is given to conditions in Kansas. Prerequisite, course 1. Putnam.

81.—HISTORY OF COMMERCE AND COMMERCIAL GEOGRAPHY.* Two hours, second semester, at 10:15. The development of the commerce of the several nations is traced to the present time, the policies they have pursued in securing it, and the natural advantages each possesses in the competition of the world market. The sources of raw materials, the location of the demand and supply of finished products, and the governmental activities de-

signed to stimulate national prestige along commercial lines are studied. Prerequisite, course 1. ———.

90.—ELEMENTS OF ECONOMICS. Three hours, second semester, at 11:15. The same as course 1, except that it is designed especially for the needs of Juniors and Seniors. Putnam.

91.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH. Two hours, first semester, at 8. This course is designed to give mature students of economics a firm grasp of the more important economic principles. The theories of value and prices, are studied in the light of current schools of thought. Prerequisite, course 1 or 90, but open only to Seniors and graduate students. Students are expected not to enroll in this course unless they plan to take course 92. Millis.

92.—VALUE, PRICE, AND THE DISTRIBUTION OF WEALTH. Two hours, second semester, at 8. A continuation of course 91, which must have been completed. Millis.

93.—ECONOMIC THEORY, TO ADAM SMITH. Two hours, first semester, by appointment. The growth of thought about economic matters in ancient, mediæval and modern times, down to about the end of the eighteenth century, is studied, chiefly from the works of the original writers. This study furnishes many points for suggestive contrast and comparison between earlier and later theories, and explains many features of modern economic theories. Open to graduate students and Seniors with consent of the instructor. Boynton.

94.—ECONOMIC THEORY, SINCE ADAM SMITH. Two hours, second semester, by appointment. The extensive economic literature of the nineteenth century is the subject matter of this course. The important economists are all studied at first hand, and occasional attention is given to the works of minor writers, in cases where their writings contain important germs of theories later developed by others of greater prominence. Open to graduate students and Seniors with the consent of the instructor. Boynton.

EDUCATION.

The following courses in the School of Education are open to College Juniors and Seniors, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Education as well as the College, and will be admitted to the classes as students of the School of Education.

Courses in Education, of which detailed description will be found on other pages (*post*), are arranged in four groups. College students may not offer more than six hours in any one group.

Historical group, numbers 50, 51, 59, 60, and 63.

Scientific and theoretical group, numbers 53, 56, 64, 65, 66, 67, 68, 70, and 71.

Administrative and practical group, numbers 58, 61, 72, 73, and 74.

Teachers' courses, numbers 80, 81, 82, 83, 85, 86, 87, 88, 89, 90, 91, 92, 93, and 98.

No college credit will be given for practice teaching.

ENGINEERING.

The following courses in the School of Engineering are open to College students, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Engineering as well as the College, and will be admitted to the classes as engineering students.

3.—DESCRIPTIVE GEOMETRY. Three hours, second semester.

2.—SURVEYING. Five hours; two hours in first semester, three hours in second semester.

50.—MECHANICS. Five hours, both semesters.

51.—STRENGTH OF MATERIALS. Five hours, both semesters.

68.—HYDRAULICS. Three credit hours, first semester.

52.—DYNAMO MACHINERY. Three hours, first semester.

51.—THEORY OF ALTERNATING CURRENTS. Five hours, second semester.

51.—THERMODYNAMICS. Four hours' credit, first semester.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
 Professor HOPKINS.
 Associate Professor O'LEARY.
 Associate Professor WHITCOMB.
 Associate Professor SISSON.
 Assistant Professor RAYMOND.
 Assistant Professor LYNN.
 Assistant Professor GRAY.
 Assistant Professor JOHNSON.
 Assistant Professor GARDNER.
 Assistant Professor CROISSANT.
 Miss WINSTON, Instructor.*
 Miss MORGAN, Instructor.
 Miss MCINTYRE, Instructor.
 Miss BARSTOW, Instructor.
 Miss BROWN, Instructor.
 Miss LAIRD, Instructor.
 Mr. DERBY, Fellow.

EQUIPMENT.—Apart from a number of portraits and historical maps, the equipment for this department is the University library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English literature, and to the English language. There are complete sets of journals, such as *Anglia* and *Englische Studien*, and the publications of the Early English Text Society, the Chaucer Society, the English and American Dialect Societies, the Spenser Society, the Shakspeare Society, the New Shakspeare Society, the Shelley Society, and the Browning Society. The library also

* Absent on leave, 1912-'13.

possesses the Shakspeare Jahrbuch, and facsimiles of the quartos and folios of Shakspeare. The total number of volumes pertaining to the subjects in this department is 10,298. Of these 1072 are devoted to Shakspeare, 6860 to English literature, 395 to English philology, and 1971 to American literature.

ADVICE AS TO CHOICE OF STUDIES.—Not later than the beginning of his Junior year, every student should confer with an instructor in reference to choice of studies. *He should take special notice of the fact that certain elementary and fundamental courses scheduled for Freshman and Sophomore years—courses 1, 2, 10 and 11, or their equivalent—must be completed before he can be admitted to any other English courses whatever; and that courses 12 and 13, scheduled for the Sophomore year, or their equivalent, are prerequisite to all succeeding courses in English literature except 14 and 15.*

For the requirements for a teacher's certificate in English, see course in the School of Education.

Rhetoric and Composition.

1.—RHETORIC AND ENGLISH COMPOSITION.** Three hours, first semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Themes and exercises, with outlines of rhetorical theory. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

2.—RHETORIC AND ENGLISH COMPOSITION.** Two hours, second semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. A continuation of course 1. Required of all Freshmen in the College not offering for entrance a fourth unit in English composition. Gardner and assistants.

Credit for courses 1 and 2 is given provisionally and will be withdrawn for subsequent use of notably bad English.

50.—NARRATION AND DESCRIPTION. Three hours, first semester, at 8 and 9. A study of general principles, with exercises. A fundamental course, recommended as preparation for journalism 50 and 51 and English 55 and 58. O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours, second semester, at 8 and 9. A continuation of course 50. O'Leary and Lynn.

52.—EXPOSITION. Two hours, first semester, at 9. A study of general principles, with outlines and exercises. A fundamental course. Recommended as preparation for English 55 to 58, inclusive, and journalism 50 and 51. Gardner.

53.—ARGUMENT. Three hours, second semester, at 2:30. A study of the general principles of logic as applied in this course, with exercises and briefs. Hopkins.

55.—LITERARY CRITICISM. Two hours, first semester, at 1:30. Study of the principles and methods of criticism through its literature, with practice in book reviewing and in critical writing. Hopkins.

56.—VERSIFICATION. One hour, first semester, Monday, at 3:30. Study of the forms and principles of English verse, with exercises. Hopkins.

57.—ESSAY WRITING. Two hours, second semester, at 10:15. A study of general principles, with exercises. O'Leary.

58.—PROSE INVENTION. Two hours, second semester, at 1:30. General survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Prerequisites, one or more advanced courses in English composition. Hopkins.

Language.

60.—ELEMENTARY OLD ENGLISH. Three hours, first semester, at 3:30. Old English grammar, with reading of West Saxon prose texts. A prerequisite for all other courses in Old English. Croissant.

61.—BÉOWULF. Two hours, second semester, at 3:30. Open only to students who have had course 60. Croissant.

62.—MIDDLE ENGLISH. Two hours, first semester, at 2:30. Language and literature of the fourteenth century, exclusive of Chaucer. Croissant.

63.—MIDDLE ENGLISH. Three hours, second semester, at 3:30. Reading of Middle English texts, with study of the development of the English language, its sounds, inflections, and syntax. Croissant.

64.—ADVANCED OLD ENGLISH. Three hours, first semester, at 1:30. Selections from Cynewulf and the Caedmonian poems. Must be preceded by course 60. Croissant.

65.—METRICAL ROMANCES. Two hours, second semester, at 2:30. Reading of Middle English romances. Croissant.

66.—THE ANGLO-SAXON CHRONICLE. Two hours, first semester, at 1:30. Reading of the Chronicle, with special attention to the life of the English people. Must be preceded by course 60. Croissant.

68.—MODERN ENGLISH GRAMMAR. Two hours, first semester, at 1:30. English grammar, chiefly practical, for intending teachers. Open only to qualified applicants after consultation with the instructor. Gray.

English Literature.

10.—ENGLISH LITERATURE. Two hours, first semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Class study of representative authors, with required library reading. Open to all students of the College not offering English literature as a fourth unit of entrance English. Required for admission to all other courses in English, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

11.—ENGLISH LITERATURE. Three hours, second semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. A continuation of course 10. Required for admission to all other courses in

English, except in the case of students who offer for entrance a fourth unit in English literature. Johnson and assistants.

12 *a* and *b*.*—HISTORY OF ENGLISH LITERATURE.* Two or three hours, first semester. Three-hour divisions, at 8, 9, 10:15, and 1:30. Two-hour divisions, at 10:15 and 11:15. Prerequisites, English 1, 2, 10, and 11. Required for admission to courses 60 to 66, inclusive, and courses 71 to 90, inclusive. Gray and assistants.

13 *a* and *b*.*—HISTORY OF ENGLISH LITERATURE.* Two or three hours, second semester. Three-hour divisions, at 10:15 and 11:15. Two-hour divisions, at 8, 9, 10:15, and 1:30. A continuation of course 12. Prerequisites, English 1, 2, 10, 11, and 12. Required for admission to courses 60 to 66, inclusive, and courses 71 to 90, inclusive. Gray and assistants.

14.—TYPES OF LITERATURE I.* Three hours, first semester, at 11:15. Poetry: the lyric, epic, and drama. With course 15, a view of English literature according to species, a method of studying and classifying literature, and a preparation for advanced courses. Lectures, discussions, and reading-reports. Prerequisites, English 1, 2, 10, and 11. Gray.

15.—TYPES OF LITERATURE II.* Two hours, second semester, at 10:15. Prose: the essay, letter, biography, and novel. Continuation of course 14, but may be taken separately; prerequisites, same as in 14. Lectures, discussions, and reading-reports. Gray.

71.—AMERICAN LITERATURE I. Three hours, first semester, at 1:30. General history, with special reference to the work of the chief American poets. Lecture and library course, with class study of representative selections. Hopkins.

72.—AMERICAN LITERATURE II. Three hours, second semester, at 1:30. Study of later writers and of current literature, with special reference to fiction. Lecture and conference course, with required readings and reports. Hopkins.

73.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours, first semester, at 9. The period covered is that from 1660 to approximately 1735. O'Leary.

74.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours, second semester, at 9. Covers the period from 1735 to 1798. O'Leary.

75.—VICTORIAN LITERATURE, exclusive of the novel and Tennyson and Browning. Two hours, first semester, at 10:15. Dunlap.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester, at 11:15. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, De Quincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Two hours of library work daily and preparation of two theses. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester, at 9. Poetry. Biographical and

critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily and preparation of two theses. Dunlap.

78.—SHAKSPERE. Three hours, both semesters, at 10:15. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Dunlap.

79.—CHAUCER. Three hours, first semester, at 9. Lectures upon Middle English grammar and upon the life and times of Chaucer. Neither Old nor Middle English required for entrance. Careful reading of the Prologue, Knightes Tale, and the Nonne Preestes Tale. Rapid reading of a large part of the Canterbury Tales. Preparation of two theses. Dunlap.

80.—SHELLEY AND KEATS. Two hours, second semester, at 11:15. Lectures, and interpretation of selected poems. Dunlap.

81.—BROWNING AND TENNYSON. Two hours, second semester, at 8. Interpretative study of selected poems, with general view of the works of both authors. Lynn.

82.—CARLYLE AND EMERSON. Two hours, second semester, at 2:30. The characteristics of each man's work and its relation to nineteenth century thought. Class reports and discussions of other leading contemporary thinkers. Johnson. (Not given in 1914.)

83.—MILTON AND HIS CONTEMPORARIES. Two hours, second semester, at 2:30. The poetry and prose of Milton, and of a selected number of representative contemporary authors, including Browne, Taylor, and the Caroline poets. (Not given in 1915.) Johnson.

84.—THE MODERN ENGLISH LYRIC. Two hours, first semester, at 3:30. A representative body of English lyrics will be studied in the classroom, with attention to the general criticism of lyric poetry, as well as to individual and historical values. Whitcomb.

85.—TECHNIC AND THEORY OF THE DRAMA. Two hours, first semester, at 2:30. Study of dramatic dialogue, diction, characterization, and stage presentation. Lectures and weekly exercises in criticism or composition. Whitcomb.

86.—HISTORY OF THE ENGLISH DRAMA. Three hours, first semester, at 2:30. From the early liturgical plays to 1642. Study of influence and the growth of types; stage history; and reading and criticism of about thirty plays. Written reports and lectures. Johnson.

87.—HISTORY OF THE ENGLISH DRAMA. Two hours, second semester, at 2:30. English dramatic history from 1642 to the present time, with special attention given the nineteenth century. Whitcomb.

88.—THE ENGLISH NOVEL. Three hours, second semester, at 11:15. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily and preparation of two theses. Dunlap.

89.—THE ENGLISH ESSAY. Two hours, second semester, at 9. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. Lectures, theses, and library work. O'Leary.

90.—THE DEVELOPMENT OF ENGLISH PROSE. Three hours, first semester, at 11:15. A study of the most important prose written between 1350 and 1660, with a survey of the development of prose style. Lectures, class reports, and library work. Sisson.

ENTOMOLOGY.

Professor HUNTER.
Mr. HUNGERFORD, Instructor.

EQUIPMENT.—The arrangement of the laboratories is such as to provide for: (1) General instruction; (2) research work in serial breeding experiments and conditions governing development. Special thermal regulators for determination of influence of temperature on development are used in these researches. A feature of great value is the recent completion of the cross-referenced card index to the current literature of the subject. The extensive collections, both biologic and systematic, offer exceptional facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of Museums (*post*). A large series of cabinets have been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes. The materials for study and apparatus at hand afford an adequate equipment for the courses offered.

ADVICE AS TO CHOICE OF COURSES.—The courses in entomology are designed to meet the needs of three classes of students, viz.: (1) The student who desires a fuller knowledge and appreciation of the biological problems illustrated by insect life; (2) the student who is preparing to teach botany, zoölogy or general biology in the high school; and (3) the special student, who is preparing to become a teacher or investigator along entomological lines. For the first class, course 1 is recommended; for the second, courses 1, 50 and 56; and for the third, courses 1, 50, 51 and 53. (Those preparing for appointments as economic entomologists should take, in addition, courses 55 and 56.) After completing these fundamental courses, the aims of each student will largely determine the selection of advanced courses.

1.—INTRODUCTORY ENTOMOLOGY.* Five hours,, each semester, 1:30 to 3:30. This course is a general introduction to the life of the insect world. Its aim is to lead the student into a fuller appreciation of nature by a study of the varied and in-

teresting life histories of insects. It is a combination of lecture and laboratory work, in which an abundance of illustrative material will be used. Prerequisite, zoölogy 1. Hunter, Hungerford.

50.—GENERAL ENTOMOLOGY. Three hours, first semester, 10:15 to 12:15. This course includes a general survey of the morphology, distribution and behavior of the orders of insects, and deals with some of the important problems of biology as illustrated in insect life. The work in the laboratory consists of a morphological study of types, followed by a comparison of each type studied with closely allied forms. A series of lectures and assigned readings accompany the laboratory work. Prerequisite, zoölogy 1. Hunter.

52.—SYSTEMATIC ENTOMOLOGY I. Two hours, first semester, 1:30 to 3:30. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of the classification of insects, and is accompanied by lectures on the life histories of the various forms studied. Prerequisite, zoölogy 1. Hungerford.

51.—GENERAL ENTOMOLOGY II. Three hours, second semester, 10:15 to 12:15. A continuation of course 50. Hunter.

53.—SYSTEMATIC ENTOMOLOGY II. Two hours, second semester, 10:15 to 12:15. A continuation of course 52, with special reference to the determination of species in some one order of insects. Hungerford.

54.—MORPHOLOGY OF INSECTS. Three hours, first or second semester, by appointment. A continuation of course 51, conducted in a more advanced manner. Students are required to review a piece of well-executed morphological work, with a view of leading up to original research on problems to be assigned. Hunter.

55.—TAXONOMY OF INSECTS. Three hours, first or second semester, by appointment. A continuation of course 53, enabling the student to undertake the serious study of some one family. Students qualified to take this course are afforded an opportunity to work with the material taken on the biological survey of the previous summer. (Special study of the Coccidæ may be elected in this course.) Hunter, Hungerford.

56.—APPLIED ENTOMOLOGY. Two hours, first semester, 10:15 to 11:15. Lectures, readings, and observations in the field on forms of economic value; life histories, habits and methods of combating the injurious forms, and of utilizing the beneficial. Prerequisite, courses 1, 50, or 52. Hungerford.

60.—ECONOMIC PLANTS AND ANIMALS. Five hours, first semester, 8 to 10. A course intended to give the University student, as part of his general training and culture, a knowledge and appreciation of the basic industry of the state. Laboratory, lectures, conferences, and field trips. Ten hours a week. Prerequisite, botany 3 or zoölogy 1. Shull, Hungerford.

FRENCH. (See Romance Languages and Literatures.)

GEOLOGY AND MINERALOGY.

Professor HAWORTH.

Assistant Professor TODD.

Assistant Professor TWENHOFEL.

EQUIPMENT.—The library includes about all the standard books on geology, paleontology and mineralogy in the English, German and French languages, fairly complete sets of governmental, state and foreign reports, numerous American and foreign periodicals, complete sets of many of them, and transactions of scientific societies, domestic and foreign, all of which are located in the reading room of the Geology and Mining Building. Other periodicals and transactions which belong jointly to two or more departments are located in the Spooner Library Building, readily accessible to all students. In addition the department has numerous charts, maps, lantern slides, *papier-mâché* models of structural and topographic forms, sets of wooden and glass models for crystallography, petrographic microscopes, and hundreds of thin rock sections and other hundreds of specimens of crystalline rocks for classes in petrology.

Commodious and well-furnished laboratories for mineralogy, paleontology and geology and extensive collections of rocks, characteristic fossils, minerals, crystals, ores and other economic products are all conveniently located in the same building, while the Natural History Museum, not far away, is unusually rich in the remarkable vertebrate fossils for which Kansas and the western plains are noted.

ADVICE AS TO CHOICE OF COURSES.—*Geology.* The following courses in geology are designed to meet the requirements of two classes of students: those wishing to become working geologists, and those wishing only a general outline of the subject as a part of a liberal education. In the former case the student is advised to take all the courses offered, as nearly as possible in the order given. In the latter case he should begin with 1, and take 50, 51, or 52 and 53, in any order. Course 1 is open to all students of the College except Freshmen. Courses 50 to 59, inclusive, are open to undergraduates, and to graduates who have not had their equivalents.

Mineralogy. Students wishing to specialize in mineralogy should take courses 60 and 61; those wishing to specialize in petrography, 60, 61, 62 and 63. Should the student desire to give only a limited time to the subjects of mineralogy and petrography, courses 1, 60 and 62 should be chosen. Course 60 is open to College Juniors and Seniors. Courses 61, 62 and 63 are open to Juniors and Seniors, and also to graduates who have not had their equivalents.

Paleontology. Students contemplating the study of paleontology should take zoölogy 1 and geology 1 in order. Zoölogy 2 is also recommended as preparatory work.

Geology.

1.—ELEMENTARY GEOLOGY.* Five hours, each semester, daily, at 9, 10:15, 11:15, and 2:30. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy and botany will be of advantage in this course. Todd and Twenhofel.

50.—AREAL GEOLOGY I. Two hours, first semester, at 10:15. This is a continuation of course 1, with special reference to the stratigraphy of land areas, continental development, the history of animal and plant life, and the uses of fossil forms in the identification and correlation of geologic horizons. Prerequisite, course 1. Todd.

51.—AREAL GEOLOGY II. Three hours, second semester, at 10:15. A continuation of course 50. Todd.

52.—ECONOMIC GEOLOGY I. Three hours, first semester, at 9. A general study of the metallic products of mine and quarry, considered from a scientific and a practical standpoint, including the nature, origin, amount, and geographic and geologic distribution of the same. Prerequisites, elementary chemistry and geology 1 or 60. Lectures and library work. Haworth.

53.—ECONOMIC GEOLOGY II. Two hours, second semester, at 10:15. Nonmetallic products. A continuation of course 52. Haworth.

54.—PHYSIOGRAPHY. Three hours, second semester, at 9. A study of the general principles of physiography, with detailed studies of specific areas in latter parts of course. Prerequisite, course 1. Lectures, textbook, and library work. Haworth.

55.—DYNAMIC GEOLOGY I. Two hours, first semester, by appointment. A brief course on the elementary principles of dynamic geology, including a study of continental development, mountain areas, mountain structure, mountain origin, and kindred subjects. Lectures, library and laboratory work. Prerequisites, courses 1, 50, and 51. Haworth.

56.—DYNAMIC GEOLOGY II. Three hours, second semester. A continuation of course 55. Haworth.

57.—INVERTEBRATE PALEONTOLOGY I. Five hours, first semester, by appointment. Consideration will first be given to the principles of paleontology, after which those invertebrate animals found in a fossil state will be studied in respect to their structure, classification and evolution. Lectures, library, and laboratory work. Geology I and zoölogy I are prerequisites, and zoölogy II very desirable. Twenhofel.

58.—INVERTEBRATE PALEONTOLOGY II. Five hours, second semester, by appointment. A continuation of course 57, but stratigraphical in its character. A study will be made of the principles of stratigraphy, and fossils will be studied as indices of time and geography. Lectures, library, and laboratory work. Invertebrate paleontology I is prerequisite. Twenhofel.

59.—SOILS. Three hours, second semester, at 2:30. A short course on soils, including a study of origin, nature, fertility and maintenance of same in soils. Scientific and practical. Text-book, lectures, and readings. Prerequisites, chemistry I, geology I. Haworth.

Mineralogy.

10.—ELEMENTARY MINERALOGY I.* Five hours, second semester, daily, 3:30 to 5:30. A brief course in crystallography, blow-pipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Prerequisite, elementary chemistry. Todd.

61.—SYSTEMATIC MINERALOGY. Five hours, first semester, daily, by appointment. This course is a continuation of mineralogy I, including an extended study of mathematical and physical crystallography. Todd.

62.—PETROGRAPHY. Three hours, first semester, by appointment. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. Haworth.

63.—PETROGRAPHY. Three hours, second semester, by appointment. A continuation of course 62. Haworth.

GERMANIC LANGUAGES AND LITERATURES.

Professor CARRUTH.
Associate Professor ENGEL.
Associate Professor CORBIN.
Assistant Professor KRUSE.
Assistant Professor CAMPBELL.
Assistant Professor BRIGGS.
Assistant Professor STURTEVANT.
Miss WILSON, Instructor.
Mr. SEIPT, Instructor.
Miss JONES, Instructor.
Miss ERNST, Instructor.
Miss PALMER, Instructor.
Mr. KELLERMANN, Lecturer.
Mr. STUBBS, Instructor.

EQUIPMENT.—The German department has an excellent stereopticon and over 1000 stereopticon slides, illustrating scenery, costumes, and biography; an increasing number of excellent photographs and prints in frames; a set of thirty German wall maps showing the various separate states, and a few busts. The department has a Columbia graphophone and is accumulating a series of speech records for illustration of differing German pronunciation. There are 3866 volumes in the library of the German department, and twenty-one philological and literary journals are received.

The department has also a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies, the German department is prepared to encourage graduate study at the University of Kansas in Germanic languages.

The Deutscher Verein owns a piano, which is used for accompanying the German songs of the Verein.

ADVICE AS TO CHOICE OF COURSES.—Students who plan to become teachers of German in high schools and academies should consult with the head of the department before the close of the Sophomore year. An outlined course for the four College years will be found on the department bulletin board, and is recommended to the careful attention of those concerned. Courses 1 to 17, inclusive, are open to all students of the College. Courses 50 to 59 are open to both undergraduates in the College and to graduate students. The full amount of Latin 1, 2 and 3 for entrance is required as preparation for German 1 and 2. Students who enter with a deficiency in Latin and wish to take German 1 and 2 to make up entrance deficiency may do so in a class in the Oread high school, taught by an advanced student, or in the Lawrence high school, or with a private tutor. Courses 1, 2, 3, 4, 5, must be taken in this order.

1.—GERMAN GRAMMAR. Five hours, first semester, at 8, 9, 10:15, 11:15, 1:30 to 3:30; second semester, at 8, 9, and 11:15. The first twenty-two lessons of Carruth's Otis's Grammar, with composition exercises; Carruth's Reader, about fifty pages. Corbin, Kruse, Campbell, Jones, Ernst, and Palmer.

With the afternoon division, from 1:30 to 3:30, the laboratory method is used, requiring two hours' classroom work and one hour preparation outside. It is open to students of the College only. The other divisions will be determined by convenience of hours alone. Practice classes in beginning German, at eight o'clock, are formed in the Oread high school, to which a limited number of students who lack the requirements of entrance Latin will be admitted.

2.—GERMAN READER, completed. Five hours, first semester, at 9, 11:15, and 2:30; second semester, at 8, 9, 10:15, 11:15, and 3:30. Carruth's Reader, completed. Schiller's Wilhelm Tell (complete). Heyse's Die Blinden used as a basis for narrative and conversation. Also special exercises in word order and auxiliary verbs, and sight-reading. Corbin, Kruse, Campbell, Seipt, Ernst, Palmer, Kellermann.

3.—GERMAN PROSE. Five hours, first semester, at 8, 9, 10:15, 11:15, and 3:30; second semester, at 8, 10:15, and 2:30. Lessing's Minna von Barnhelm; historical prose; preceded by review of grammar. Sight-reading. Campbell, Sturtevant, Seipt, Jones, Ernst, Palmer, Kellermann.

4.—SCHILLER'S WALLENSTEIN. Five hours, first semester, at 8, 9, 11:15, and 3:30; second semester, at 8, 9, 10:15, 11:15, and 3:30. Outline of German literature. Composition and conversation. Engel, Corbin, Kruse, Campbell, Jones, Seipt, Ernst.

5.—GERMAN COMPOSITION. Required of all students for admission to courses 9 and following. Three hours, first semester, at 9, 10:15, 11:15, and 1:30; second semester, at 9, 10:15, and 11:15. Translation of connected English; Pope's German Composition, Fossler's Practical German Conversation. Kruse, Campbell, Sturtevant, Seipt, Jones, Ernst, and Kellermann.

Courses 6, 7 and 8 are open to students who have had German 4, but no student may take more than one of them for credit.

6.—SCIENTIFIC GERMAN. Three hours, second semester, by appointment. Open to students in science on recommendation of the head of the scientific department. Introductory reading of Lassar-Cohn's *Die Chemie im täglichen Leben*, together with a survey of the literature of science in German, followed by more rapid and extensive reading in subjects suggested by the head of the scientific department. The purpose of this course is to develop rapid and intelligent reading of scientific German. Engel.

7.—HISTORICAL GERMAN. Three hours, second semester, by appointment. Open to students in history and sociology on recommendation of the heads of those departments. Introductory reading of Schönfeld's *German Historical Prose*, together with a survey of the literature of history in German, followed by more rapid and extensive reading of works suggested by the head of the major department. The method and purpose of this course correspond to those of course 6. Kellermann.

8.—JOURNALISTIC GERMAN. Three hours, second semester, by appointment. Open to students in journalism on recommendation of the head of the department. Introductory reading of Prehm's *Journalistic German*, together with a survey of German journalism, followed by more rapid and extensive reading of German periodicals. The method and purpose of this course correspond to those of course 6. Carruth.

9.—GOETHE'S *EGMONT*, AND EARLIER DRAMAS, with Schiller's two essays on *Egmont*. Two hours, second semester, at 9. Sturtevant, Ernst.

10.—SCHILLER'S LATER DRAMAS. Two hours, first semester, at 9 and 10:15. *Die Braut von Messina*, *Maria Stuart*, *Die Jungfrau von Orleans*. Engel, Kruse.

Courses 9 and 10 are designed as complements to course 5, and only one of them may be taken for credit.

11.—GERMAN ORAL COMPOSITION. Two hours, first semester, at 11:15 and 1:30; second semester at 9, 10:15, and 11:15. Exercises in practical conversation and extemporaneous speaking, based on modern German prose. Must be preceded by courses 5 and 9 or 10. Kellermann.

12.—SCHILLER'S *DON CARLOS* AND EARLIER DRAMAS. Three hours, second semester, at 10:15. Engel.

13.—LESSING'S *DRAMATURGIE*. Two hours, first semester, at 8. Reading of portions of the *Hamburgische Dramaturgie* and a closer study of some of the problems which Lessing touches upon. Designed for students who wish to read some critical prose. Campbell.

14.—LESSING'S *LAOCOÖN*. Two hours, second semester, at 11:15. Reading and discussion of Lessing's theory of poetry and art, with translation and abstracts. Designed for students who wish to read some critical prose. Campbell.

15.—LESSING'S *NATHAN DER WEISE*. Three hours, first semester, at 11:15. Carruth or Corbin.

16.—GOETHE'S TASSO AND LATER DRAMATIC WORK. Two hours, first semester, at 11:15. Corbin.

17.—GOETHE'S FAUST (parts I and II). Three hours, second semester, at 11:15. Prerequisite, 5 hours beyond course 5. Carruth, Corbin.

From the group of courses 11, 12, 13, 14, 15, 16 and 17 not more than 10 hours may be taken for credit.

50.—GERMAN LITERATURE. Three hours, first semester, at 10:15. An outline history. Lectures, the class following Kluge and Scherer or Francke. Essays and criticisms by members of the class. Open only to students who have had twenty-five hours of the preceding courses or equivalent. Carruth.

51.—GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. Three hours, second semester, at 10:15. Klopstock, Wieland, Lessing, Herder, Goethe, and Schiller. Reading the chief works, with reviews. Carruth.

52.—HISTORY OF GERMAN PROSE FICTION. Three hours, second semester, at 10:15. Lectures on the history of the novel and on methods and schools in fiction. Hauff, Scheffel, Freytag, Keller. Careful reading of one work by each author; others outside. Theses on separate authors and on the whole course, by members of the class. (Not given in 1913-'14.) Carruth.

53.—GOETHE'S LYRICS. Two hours, first semester, at 8. Study of the lyrics in connection with the life and literary development of the author. Lectures and reports. Corbin.

54.—THE ROMANTIC LYRIC. Three hours, second semester, at 8. Study of the principal lyric writers from Novalis to Heine. Lectures and reports. Corbin.

55.—THE REALISTIC DRAMA. Three hours, first semester, at 8. A brief consideration of the development of the German drama, followed by a more intensive study of the dramas of Hebbel, Ludwig, and Anzengruber. Lectures, readings, and reports. Kruse.

56.—THE NATURALISTIC DRAMA. Two hours, second semester, at 8. Hauptmann, Sudermann, and Halbe. Lectures, readings, and reports. Should be preceded by course 55. Kruse.

57.—THE DRAMA OF THE ROMANTICISTS. Two hours, second semester, at 8. Heinrich von Kleist, Grillparzer, and Wagner. Lectures, readings, and reports. This course alternates with course 56. Kruse.

58.—MODERN SWEDISH. Two hours, first semester, and three hours, second semester, by appointment. Fort's Elementary Swedish Grammar; Hildebrand's Läsebok, Esaias Tegnér's Fritiofssaga and Nattvardsbarnen. Sturtevant.

59.—MODERN NORWEGIAN. Two hours, first semester, by appointment. Olsen's Grammar and Reader, and selected texts. (Not given in 1913-'14.) Sturtevant.

60.—MODERN NORWEGIAN. Three hours, second semester. A continuation of course 59. Sturtevant.

GREEK.

Professor WILCOX.

Associate Professor STERLING.

EQUIPMENT.—Twenty-nine casts of sculpture, five models, a series of facsimile reproductions of Mycenæan works of art, a relief map, numerous wall maps, 800 photographs, 500 plates (many colored), 55 illustrated folios, 2500 volumes in library, 15 current periodicals, 2500 stereopticon slides.

ADVICE AS TO CHOICE OF COURSES.—Those who aim to become teachers of Greek or Latin or any other language, or who take Greek for general culture or discipline, should take the courses in order from 1 to 57, or as many of them as they have not taken before entering the University, or have time to take. Students preparing for the ministry will find it best to follow the same plan, and take the course in New Testament Greek II in addition, or in place of some course in classical Greek they might otherwise take. Students who aim simply at reading the New Testament in the original for their own pleasure or profit can accomplish that by taking courses 12 and 13. Students of science and English may get in course 58 a good working knowledge of the scientific and other English words that are derived from Greek. Students of all literatures who can give no more time to Greek may get a good idea of the content of Greek literature, and especially a valuable knowledge of mythology, from courses 59 and 60, or a partial knowledge from either of these courses. Those who desire an introduction to the architecture of all periods may get it in course 61; to the sculpture and painting of all periods, in course 62. Greek students should take also the courses in Greek and Roman history, in the history of philosophy, and as many literary courses as possible.

For Students of Classical Greek.

1.—ELEMENTARY GREEK. Five hours, first semester, at 9. White's First Greek Book. Introductory course, aiming at a mastery of forms and syntax and the most common Attic vocabulary. Sterling.

2.—XENOPHON'S ANABASIS, four books. Five hours, second semester, at 9. Application of principles learned in preceding course, with a study of Xenophon's life and works and a comparison of the Anabasis with records of other great military retreats. Sterling.

3.—HOMER'S ILIAD. Benner's Selections. Three hours, first semester, at 10:15. Reading of as much as possible in the original and the rest of the Iliad in translation. Study of Homeric forms and versification, with lectures on the epic style and Homeric life and times. Wilcox.

4.—STORIES AND LEGENDS. Mythology in the original Greek. Two hours, first semester, at 10:15. The aim of this course is to give the student a knowledge of the many stories of gods, heroes and men that have come down to us from Greek authors. Wilcox.

5.—PLATO. The Apology, Crito, and selections from the Phædo and the Symposium. Three hours, second semester, at 10:15. A study of the life and work of Socrates and an introduction to the writings of Plato. Wilcox.

6.—HERODOTUS. Merry's Selections. Two hours, second semester, at 10:15. Reading of Merry's Selections in the original, and other significant selections in translation. Lectures on the style and character and influence of Herodotus as a historian. Sterling.

7.—GREEK TRAGEDY. Antigone of Sophocles and Iphigenia among the Taurians of Euripides. Three hours, first semester, at 11:15. Study of dramatic form and history of the Greek drama. Lectures on the Greek theater. Sterling.

8.—PLUTARCH'S LIFE OF CÆSAR. Two hours, first semester, at 11:15. Du Pontet's Selections read in the original, and the rest in translation. Especially for Latin students, but open to all who are prepared to take the course. Sterling.

9.—DEMOSTHENES. Three hours, second semester, at 11:15. The Philippics. Study of the history of oratory and of the life and times of Demosthenes. Sterling.

10.—MODERN GREECE IN ANCIENT GREEK. The Greek War of Independence in Ancient Greek, by Chambers. An attempt to connect the present-day Greece with the past. Two hours, second semester, at 11:15. Sterling.

50.—THE CLOUDS OF ARISTOPHANES AND MEMORABILIA OF XENOPHON. Three hours, first semester, at 9, or by appointment. Outside reading of other plays of Aristophanes, a study of the methods of the comic stage and the sources for the life of Socrates. Wilcox.

51.—THE GORGIAS OF PLATO. Two hours, first semester, at 9, or by appointment. Outside reading of other dialogues of Plato, with especial reference to the methods of the sophists. Lectures and recitations on Greek philosophy. Wilcox.

52.—HOMER'S ILIAD. Three hours, second semester, at 9, or by appointment. Reading of the whole book in the original, with critical studies of selected portions. Outside reading of Seymour's Life in the Homeric Age and Murray's Rise of the Greek Epic. Wilcox.

53.—THUCYDIDES. Two hours, second semester, at 9, or by appointment. Reading of as much as possible in the original and the rest in translation. Studies in his style and historical method compared with Herodotus and later and modern historians. Wilcox.

54.—GREEK LITERARY CRITICISM. Three hours, first semester, at 9, or by appointment. The Chœphoroi of Æschylus, Electra of Sophocles, and Poetics of Aristotle. (Not given in 1913-'14.) Wilcox.

55.—LYRIC POETRY. Two hours, first semester, at 9, or by appointment. The elegiac and iambic poetry, Solon, Theognis, and others. (Not given in 1913-'14.) Wilcox.

56.—GREEK LITERARY CRITICISM. Two hours, second semester, at 9, or by appointment. The *Electra* of Euripides, *Frogs* of Aristophanes, and *Poetics* of Aristotle and Longinus on the *Sublime*. (Not given in 1913-'14.) Wilcox.

57.—LYRIC POETRY. Three hours, second semester, at 9, or by appointment. The melic poetry, Alcæus, Sappho, Simonides, Pindar, and Bacchylides. (Not given in 1913-'14.) Wilcox.

For Students of the New Testament.

12.—ELEMENTARY NEW TESTAMENT GREEK. An introductory course for students who have no knowledge of Greek and wish to get the New Testament Greek alone. Three hours, second semester, at 10:15. Sterling.

13.—NEW TESTAMENT II. Two hours, first semester, at 10:15. Reading of as much of the New Testament as possible in the original Greek. Sterling.

For Students of English and Natural Science.

58.—THE GREEK IN ENGLISH. Three hours, first semester, at 10:15. A study of English etymology, with special reference to Greek. Scientific and ordinary English words are traced to their origin in Greek. Only so much Greek is used as is necessary for the purpose. Sterling.

Courses which Require no Knowledge of the Greek Language.

59.—GREEK LITERATURE IN TRANSLATIONS. Three hours, first semester, at 11:15. The epic and lyric poetry, Herodotus, Plato, and Plutarch. The aim of this course is to give students of any literature a knowledge of the form and content of the literature that has influenced most widely all other literatures. Wilcox.

60.—THE GREEK DRAMA IN TRANSLATIONS. Two hours, second semester, at 11:15. A dozen dramas or more of Æschylus, Sophocles, Euripides and Aristophanes are read and discussed from the points of view of form and content and influence on later and modern dramas. Wilcox.

61.—GREEK ARCHITECTURE. Two hours, first semester, at 11:15. Most of the time is spent on Greek architecture, but the fundamental principles of all styles are studied, with especial reference to the survivals and revivals of Greek elements. Wilcox.

62.—GREEK SCULPTURE AND PAINTING. Three hours, second semester, at 11:15. This course also includes, for purposes of comparison and appreciation, a summary view of the sculpture and painting of later and modern times. Wilcox.

HARMONY. (see Music.)

HISTORY AND POLITICAL SCIENCE.

Professor HODDER.
 Professor BECKER.
 Associate Professor PATTERSON.
 Associate Professor DYKSTRA.
 Assistant Professor CRAWFORD.
 Assistant Professor DAVIS.

EQUIPMENT.—The University library is supplied with all the important secondary authorities and with a considerable amount of source material. The latter includes the *Monumenta Germaniæ Historica*, the *Scriptores Rerum Italicarum*, the *Parliamentary History* and *Hansard's Debates*, the *Journals of the Lords and Commons*, the *British Statutes at Large*, the *Reports of the English Historical MSS. Commission*, and several series of the *Calendars of State Papers*. The library also contains such periodical publications as the *Annual Register*, *Gentleman's Magazine*, *Niles's Register* and *De Bow's Review*. The sets of congressional debates, *American State Papers* and *Kansas state documents* are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. The supply of wall maps for classroom use is exceptionally large.

ADVICE AS TO CHOICE OF COURSES.—The plan of the department is to furnish general courses for long historical periods, a series of intensive courses for shorter periods, and a limited number of courses in special fields. The courses in mediæval and English history serve as an introduction to all the work of the department. The general courses in modern European and American history are suited to the needs of students who do not intend to specialize in history, and the general course in one of the two fields may be taken to advantage by those intending to specialize in the other. A reading knowledge of French and German is advantageous to upper-class students of history and political science and indispensable to graduates. Students intending to take a major in this field should, early in their course, consult the instructors in the department in regard to the best arrangement of their work.

History.

1.—**MEDIÆVAL HISTORY I.** Three hours, first semester, Monday and Wednesday, at 8, and a third hour by appointment. A history of Europe from the barbarian invasions to the crusades. A fundamental course introductory to all the work in European history. Lectures, quizzes, collateral reading and reports. Patterson.

2.—**MEDIÆVAL HISTORY II.** Three hours, second semester, Monday and Wednesday, at 8, and a third hour by appointment. Covers the history of Europe from the crusades to the beginning of the sixteenth century. Lectures, quizzes, collateral reading and reports. Continues and should be preceded by mediæval history I. Patterson.

3 *a* and *b*.—**ENGLISH HISTORY I.** First semester, *a*, three hours, at 8 and 9, and *b*, two hours, at 8 and 9. Traces the de-

velopment of England, Scotland and Ireland, with emphasis upon the growth of economics, social and political institutions. Course *a* extends to 1603, and course *b* to 1485. Recitations and occasional lectures. Not open to students who have entrance credit for English history. Crawford.

4 *a* and *b*.—ENGLISH HISTORY II. Second semester, *a*, three hours, at 8 and 9, and *b*, two hours, at 8 and 9. Continues courses 3 *a* and *b*, and must be preceded by them. Not open to students who have entrance credit for English history. Crawford.

5.—MODERN EUROPEAN HISTORY I.* Three hours, first semester, at 2:30. A general survey of European development from 1500 to 1715. Continues the course in Mediæval history. Becker.

6.—MODERN EUROPEAN HISTORY II.* Three hours, second semester, at 2:30. Continues the preceding course from 1715 to 1900. Becker.

7 *a* and *b*.—AMERICAN HISTORY I. First semester, *a*, three hours, at 8 and 9, and *b*, two hours, Tuesday and Thursday, at 8. A general course, covering the period in the three-hour course to 1789 and in the two-hour course to 1763. Not open to students who have entrance credit for American history. Davis.

8 *a* and *b*.—AMERICAN HISTORY II. Second semester, *a*, three hours, at 8 and 9, and *b*, two hours, at 8 and 9. Continue courses 7 *a* and *b* from 1789 and 1763, respectively, and preferably preceded by them. Davis.

50.—GREEK HISTORY. Two hours, first semester, at 11:15. The course will trace the political and intellectual development of the Greeks and emphasize social and economic changes. Lectures, quizzes and collateral reading. Patterson.

51.—ROMAN HISTORY. Two hours, second semester, at 11:15. A general survey, in which the period of the late republic and early empire receives special attention. Continues but not necessarily preceded by Greek history. Patterson.

52.—MEDIÆVAL CULTURE. Two hours, first semester, at 9. A survey of the intellectual development of Europe from Augustine to Dante, including such subjects as mediæval literature, scholasticism, the universities, architecture, and the rise of the vernacular languages. Must be preceded by courses 3 and 4. Patterson.

53.—MEDIÆVAL INSTITUTIONS. Two hours, first semester, at 9. Growth of political and ecclesiastical institutions during the feudal period and a detailed analysis of the organization of society in the twelfth and thirteenth centuries. Must be preceded by courses 3 and 4. Patterson. (Not given in 1913-'14.)

54.—THE ITALIAN RENAISSANCE. Two hours, second semester, at 9. A survey of the political, social, economic, intellectual and

artistic development of the Italian people from the fourteenth to the sixteenth centuries. Must be preceded by courses 3 and 4. Patterson.

55.—THE PROTESTANT REVOLT. Two hours, second semester, at 9. After a review of the social, economic and intellectual antecedents of the movement in Germany, the career of Luther and the progress of the revolt to the Peace of Augsburg will be traced. Must be preceded by courses 3 and 4. Patterson. (Not given in 1913-'14.)

56.—ENGLISH INSTITUTIONS I. Two hours, first semester, at 10:15. Treats of the foundations of parliament, central and local government, the judiciary, feudalism, manorial system and guilds, to 1485. Lectures, recitations and collateral reading. Crawford.

57.—ENGLISH INSTITUTIONS II. Two hours, second semester, at 10:15. Covers the Tudor absolutism, the Reformation, the struggle between the crown and parliament, and the development of parliamentary government, with special emphasis upon the nineteenth century. Lectures, recitations and collateral reading. Continues and must be preceded by English institutions I. Crawford.

58.—HISTORY OF THE ENGLISH COMMON LAW I. Two hours, first semester, at 10:15. An historical treatment of the general principles of the status of persons, of real and personal property, of legal obligations, of crimes and misdemeanors, of civil and criminal procedure, and of the growth of the judiciary in England in mediæval and modern times, and of the influence of those principles in this country. This course is primarily designed for students intending to enter law, journalism or business. Textbook, lectures and assigned reading. Crawford. (Not given in 1913-'14.)

59.—HISTORY OF THE ENGLISH COMMON LAW II. Two hours, second semester, at 10:15. Continuation of and must be preceded by course 58. Crawford. (Not given in 1913-'14.)

60.—THE OLD RÉGIME IN FRANCE. Two hours, first semester, at 1:30. Devoted mainly to a study of the institutions of France under the Old Régime, and of the movement for reform prior to the French Revolution. Open to students who have had course 8 and to others by permission of the instructor. Designed as an introduction to course 61. Becker.

61.—FRENCH REVOLUTION. Two hours, second semester, at 1:30. A study of revolutionary movements and institutional changes in France, 1789-1804. Open to students who have had either course 8 or course 60, and to others upon permission of the instructor. Becker.

62.—EUROPE IN THE NINETEENTH CENTURY I. Three hours, first semester, at 1:30. The history of the rise and overthrow of the Napoleonic empire and of the period of the Restoration. Open to students who have had either course 8 or course 61, and to others upon permission of the instructor. Becker.

63.—EUROPE IN THE NINETEENTH CENTURY II. Three hours, second semester, at 1:30. History of Europe with special emphasis upon the liberal régime in England and France, 1830-'48, the revolutionary movement of 1848, the second empire in France, and the reconstruction of Europe, 1860-'76. Open to students who have had either course 8 or course 62, and to others upon permission of the instructor. Becker.

64.—AMERICAN COLONIAL HISTORY. Three hours, first semester, at 2:30. This course covers the discovery of America, the period of Spanish and French exploration, and the origin and development of the English colonies. Political science 52 may be taken to advantage at the same time. Hodder.

65.—THE REVOLUTION AND THE CONSTITUTION. Three hours, second semester, at 2:30. A study of the causes and results of the American Revolution and of the formation of the constitution. A continuation of course 58, but not necessarily preceded by it. Hodder.

66.—PRESIDENTIAL ADMINISTRATIONS I. Five hours, first semester, at 3:30. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. Open to Seniors. Should be preceded by political science 52. Hodder.

67.—PRESIDENTIAL ADMINISTRATIONS II. Five hours, second semester, at 3:30. The political and constitutional history of the United States from 1840 to 1876. Treats the causes and results of the Civil War. Continuation of course 60. Hodder.

68.—HISTORICAL METHOD. Two hours, first semester, at 2:30. A study of historical scholarship since the Renaissance. Designed for advanced and graduate students specializing in history. Becker.

Political Science.

10.—AMERICAN GOVERNMENT.* Five hours, first semester, at 10:15 and 11:15, and repeated the second semester, at the same hours. A systematic study of the development and structure of American government, national, state and local, with emphasis upon actual workings. Dykstra.

80.—PRINCIPLES OF POLITICAL SCIENCE. Three hours, first semester, at 9. Deals with the fundamental principles of political science: the theory of the state, its origin, development, powers and organization; the classification of states, and questions of law, rights and citizenship. Dykstra.

81.—EUROPEAN GOVERNMENT. Three hours, second semester, at 10:15. An examination of the constitutions and political systems of the leading European states. Should be preceded by course 50. Davis.

82.—AMERICAN CONSTITUTIONAL LAW. Two hours, first semester, at 2:30. A study of the judicial construction of the constitution of the United States from the political rather than from the legal standpoint. Recitations. Hodder.

83.—INTERNATIONAL LAW. Two hours, second semester, at 2:30. A statement of the principles of public international law, illustrated by cases drawn from American diplomatic history. Hodder.

84.—GOVERNMENT OF DEPENDENCIES. Two hours, first semester, at 11:15. A study of the principal colonial systems and of present questions in colonial administration. Davis.

85.—MUNICIPAL GOVERNMENT. Three hours, second semester, at 9. A comparative study of the government of cities in Europe and America, their relation to the central government, their organization and administration. Dykstra.

HOME ECONOMICS.

Professor DAY.

Miss NOWELL, Instructor.

_____, Instructor.

. EQUIPMENT.—The department has nine rooms in Fraser Hall, equipped as follows: A food laboratory, in which each student is supplied not only with ordinary cooking utensils, but with thermometers and balances to allow of making the work accurate, and with chemical equipment and microscopes for a fundamental study of the properties of the food materials; a small kitchen and dining room for use in studying meal problems; a storeroom, which we hope to have equipped next year as a second food laboratory; a sewing room, with tables, machines and several textile exhibits; a laundry room, with individual equipment for use in the textile course; a chemical laboratory for use in the textile and special problem courses; a lecture room, with food charts; and an office. The standard books on the subject are in the library.

ADVICE AS TO CHOICE OF COURSES.—Theoretically, courses 1b and 1a are one course, with 1a simply a more extended study of one of the typical home economics problems. However, for instructional purposes it is divided into two parts, which may be taken together or separately. Together they give a general survey of home economics, of special value to students wishing but five hours in the department. They are also introductory to other courses in the department, though not required for all. Students who plan to take further work in home economics should notice carefully the prerequisites for the various courses and make in time the needed preparation.

1b.—ELEMENTARY HOME ECONOMICS. Two hours, both semesters, at 8 and 9. An elementary study of the home as a unit, a classification of its problems and a somewhat detailed study of a few of its typical problems. Day.

1a.—PREPARATION OF FOODS. Three hours, both semesters, 8 to 10, 10:15 to 12:15, 1:30 to 3:30. An experimental study of the properties of different classes of nutrients, with applications of this knowledge in the preparation of foods. Not open to students presenting domestic science for entrance. Nowell.

50.—SPECIAL PROBLEMS IN PREPARATION OF FOODS. Three hours, second semester. A critical study of common theories and practice in food preparation, with experimental investigation of special problems. Prerequisites, course 1a, elementary physics, elementary chemistry, and botany 2 and bacteriology 1. Day.

51.—DIETETICS. Three hours, first semester, at 3:30. A study of foods from the standpoint of the needs of the body; the functions of the different classes of foods; food habits and dietary standards as influenced by age, sex, size, occupation and various pathological conditions. The laboratory work includes practice in both weighing and estimating the food of each student in the class for given periods. The preparation of a few typical invalid dishes; the modification of milk according to various theories on infant feeding; and the planning, preparing and serving of meals to satisfy different dietetic conditions. Must be preceded by course 1a and physiology or equivalents, and after year 1913-'14 by chemistry 4. Course 53 is recommended, though not required as a prerequisite. Day.

52.—SPECIAL PROBLEMS IN DIETETICS. Three hours, second semester. This course is supplementary to 51, and gives opportunity for an experimental study of special problems in nutrition. Prerequisite 51. Day.

53.—SELECTION AND ECONOMIC USES OF FOODS. Five hours, both semesters, 1:30 to 3:30 three days, and 1:30 to 2:30 two days. Principles of marketing, domestic storage, and the planning of meals to prevent waste, give variety and regulate cost. Prerequisite, course 1a and elementary chemistry. Nowell.

60.—HOUSE SANITATION. Two hours, second semester. A study of the building, furnishing and care of the house from the standpoint of health and convenience. Prerequisites, course 1b, elementary physics, and bacteriology. Day.

70.—PLAIN SEWING AND GARMENT MAKING. No credit. First semester, Tuesday and Thursday, 1:30 to 4:30. This course is offered because the majority of students have not had the opportunity of taking it in the high school, and it is prerequisite to course 72. Principles and practice in hand and machine sewing, drafting and making simple garments. Nowell.

71.—TEXTILES. Three hours, first semester, Monday and Wednesday, 8 to 10; Friday, 8 to 9. A study of the production and manufacture of textiles from the standpoint of the consumer, the properties and uses of the different textile fibers and fabrics, tests for adulterations, principles of cleaning fabrics. Prerequisite, elementary chemistry.

72.—SELECTION AND MANUFACTURE OF CLOTHING. Five hours, two class and three laboratory periods, second semester. A study of the history of costumes, the psychology of fashion, hygienic factors of dress, costume design, with laboratory work in carrying out designs; economic problems of the construction of clothing at home as compared with the buying of the commercial product, clothing budgets, economic and sociological phases of the clothing industry, and the responsibility of the

consumer. Prerequisites, course 70 or equivalent, and design 50 and 54. Nowell.

80.—HOME ADMINISTRATION. Three hours, second semester. A brief history of the changes that have come in the work of women in the home, the economic and sociological value of home making, the organization of the household, division of the income, general principles of buying, household accounts, division of labor and responsibility in the home, system and methods in house work, labor-saving devices, means of recreation in the home. Prerequisites, zoölogy 1 or physiology 1, economics 1, sociology 1, and after 1913-'14 home economics 1b. Day.

ITALIAN. (See Romance Languages and Literatures.)

JOURNALISM.

Professor THORPE.

Assistant Professor FLINT.

Mr. LEWIS, Instructor.

Mr. NEAL, Assistant Instructor.

Men and women intending to enter newspaper work as a profession or as a stepping-stone to higher literary endeavor are here given the opportunity for that specialized training which has long been accorded other professions. The department offers technical courses in the Sophomore, Junior and Senior years, makes requirements as to preparatory courses in the Freshman year, and recommends supplementary courses to be pursued during the four years.

The aim of the department is to bridge over the two extremes in education—the German conception of specialization and the English idea of culture. Three-fourths of the student's time will be given up to purely liberal arts courses—history, English, political science, philosophy and psychology—yet the journalism courses will send him out with a profession. This appeals to high-school graduates who wish for more culture, but who feel that they must choose their vocation at once and begin specialization, thus sacrificing breadth for strength.

PRACTICAL WORK.—The *University Daily Kansan*, published by students of the University, affords every opportunity for students to put the theory of the classroom into practice. From reporter to editor-in-chief, the student learns at first hand the organization of the newspaper office, becomes familiar with the mechanical, economic and ethical problems, and acquires speed and accuracy in reportorial work and editorial supervision. Instruction in business management, particularly the science of cost finding, is emphasized, the department believing that editorial efficiency, in the Kansas field at least, is vitally dependent upon a practical understanding of modern publishing problems.

EQUIPMENT.—The laboratory of the department has all the facilities that go to make up a modern "back office." It is equipped with type-setting machines, a linotype and monotype, a complete composing room, a book and newspaper press, and a

battery of jobbers. An engraving plant and bindery will be installed as soon as possible.

Thirty-six metropolitan dailies, representing the great newspaper personalities of the world, are received, together with the leading national weeklies and magazines. Five hundred Kansas papers also reach the laboratory regularly. These current periodicals are the textbooks of the various classes.

LECTURES.—Newspaper publishers and writers appear regularly as lecturers before classes. Experts in advertising, circulation management and business management give single lectures or short lecture courses.

DESCRIPTION OF COURSES.

1.—THE NEWSPAPER.* First semester, three hours, at 10:15 and 11:15. Prerequisite, English 1 and 2. Materials and methods. The news story. The human-interest story and its kinship to the short story. The feature. The editorial. Gathering campus news and daily practice in handling the above forms. Thorpe, Lewis.

2.—THE NEWSPAPER.* Second semester, three hours, at 10:15 and 11:15. A continuation of journalism 1. Organization of the office; function of departmental heads, editor-in-chief, managing, news, city and telegraph editors; subeditors, financial, sporting, society, etc.; copy-readers, reporters. The press associations; the special correspondent; women in newspaper work; the Sunday edition; newspaper photography and cartooning; law of libel and copyright. Practical work daily in reporting and copy-reading. Thorpe, Lewis.

50.—COMPARATIVE JOURNALISM. First semester, two hours, at 11:15. Must be preceded or accompanied by journalism 1. Intensive study of great newspaper personalities, including twenty-four newspapers representative of all types in American journalism, with auxiliary lectures on journalism in England, France, Germany, and the Orient. Flint.

51.—THE SHORT STORY. First semester, three hours, at 8. The relation of manner to material in newspaper work, using the short story to illustrate the value of form in the news, human-interest and feature stories, and the editorial. A historical study of the short-story form, from the crude attempts at narrative of the early Hebrew, Egyptian and Arabian tales, through the *Gesta Romanorum*, Apuleius, Boccaccio, Æsop and Le Fontaine, Chaucer, the Grimm brothers and Anderson, Hoffman, Zschokke, Merimee, Gautier, Daudet, Balzac, Voltaire, Scott, Addison, Irving, Poe, Hawthorne, Turgeneff, Stevenson, etc., to De Maupassant, Conan Doyle, "O. Henry," and Kipling. Thorpe and Lewis.

52.—THE SHORT STORY. Second semester, three hours, at 8. A critical study of representative short stories, with practical work of gathering campus materials, constructing and sketching plots, delineating and developing characters. Lectures on the qualifications for authorship; talent and training; preparing the

manuscripts and finding a market; the short story's kinship to the human-interest story. Thorpe and Lewis.

53.—INTERPRETATION OF THE NEWS. First semester, two hours, at 10:15. Editorial writing; a study of current events in politics, science and discovery, religion and ethics, literature and art, drama and music. The object of the course is to train students to seize upon the essentials of daily events and comment on them intelligibly and intelligently. Students will prepare weekly dummy of world's news after manner of *Literary Digest* and the *Independent*, and a monthly resume after manner of *Current Opinion* and *Review of Reviews*. Flint.

54.—INTERPRETATION OF THE NEWS. Second semester, two hours, at 10:15. Continuation of course 53, with emphasis upon practical work of writing editorial matter for publication. Flint.

55.—ADVERTISING. First semester, three hours, at 11:15. A study of the principles of effective newspaper, magazine, billboard, street-car and novelty advertising. Advertising regarded as a science based on psychology. The creative power of publicity. Good and bad advertising copy. Pictorial advertising. Mail-order and "follow-up" systems. "Keying" advertisements, or the mathematics of returns. Flint.

56.—ADVERTISING. Second semester, three hours, at 11:15. Application of theory to practice by the preparation of advertising copy and the planning of advertising campaigns. Students will investigate varied problems of local merchants and make reports on methods of salesmanship through publicity. Flint.

57.—NEWSPAPER ADMINISTRATION. First semester, two hours, at 9. A study of the business side of newspaper publishing, designed to familiarize the student with the equipment of a newspaper plant, the expenses of publishing a paper, its sources of income, and the operation of a job-printing establishment. Practical experience in keeping the records of a newspaper office and in planning and executing measures to increase circulation and advertising. A course for the student who expects to own a newspaper or to work in the business departments. Flint.

58.—NEWSPAPER ADMINISTRATION. Second semester, two hours, at 9. A continuation of 57, with special emphasis on the science of cost-finding and efficiency. Flint.

59.—EDITORIAL PROBLEMS AND POLICIES. First semester, three hours. Ethics of journalism, problems of the editor, his relation to the public. The managing editor, outlining news campaigns; the news editor, his editorial capacity in display, quantity and position of news; and kindred problems. Lectures on class journalism, the varied appeal. Thorpe.

60.—EDITORIAL PROBLEMS AND POLICIES. Second semester, three hours. Continuation of 59. Thorpe.

61.—EDITORIAL PRACTICE. First semester, two hours. Practical work in collecting, preparing, and editing matter for dailies, weeklies and class periodicals. Flint.

62.—EDITORIAL PRACTICE. Second semester, two hours. Continuation of 61. Flint.

63.—TENDENCIES IN AMERICAN JOURNALISM. First semester, one hour, at 4:30. Course designed for those who do not intend to follow journalism, but who wish an appreciation of the modern newspaper as a social influence—the psychology of its power, its aspect as a public utility, the various plans for its control. Thorpe.

64.—HISTORY OF AMERICAN JOURNALISM. Second semester, two hours, at 11:15. Must be preceded or accompanied by journalism 2. A comprehensive view from the early beginnings in Massachusetts, through the succeeding periods, to the present. Special studies of the careers of great American editors and of such topics as the influence of mechanical inventions, sensationalism, commercializing influences, etc. Flint.

65.—THE MECHANICS OF PRINTING. Both semesters, three hours. Two lectures and eight hours laboratory weekly. Students are instructed in faces and value of type by actual work in composing room; taught to set type, make up and lock up forms, estimate costs; judge quantities and qualities of paper, inks, read proof, etc. This class will work on the mechanical end of the University publications. Neal.

66.—THE ART OF PRINTING. Both semesters, two hours. Two lectures and five hours laboratory. Lectures on history and development of printing, with practical work in designing advertisements, title pages, etc., and study of color schemes. Neal.

NOTE.—The above courses in printing are designed, first, to give the student a working knowledge of the mechanical department of a newspaper, that he may be better fitted for editorial supervision; second, to equip better those students who plan to own country papers; third, to reinforce rhetorical principles of mass, proportion, accuracy, emphasis, contrast, harmony, unity and variety, by practical work with type faces.

LATIN LANGUAGE AND LITERATURE.

Professor WALKER.
Associate Professor OLIVER.
Assistant Professor MURRAY.
Assistant Professor _____.

EQUIPMENT.—The department is well supplied with wall maps, books of reference and supplementary reading for all courses, photographs, and a large collection of antiquities illustrating many phases of Roman life. Its library equipment includes the Corpus of Latin Inscriptions and complete sets of all important classical journals. In addition to the general illustrative material of the classical museum, the department has about 750 large mounted photographs and many smaller unmounted ones. These are supplemented by a considerable collection of bronze, marble, and terra cotta antiquities.

ADVICE AS TO CHOICE OF COURSES.—Those who intend to take only five hours of Latin to satisfy a group requirement must

take course 1 if they have entered with no Latin, course 2 if with one unit, course 3 if with two units, course 4 if with three units. If they have entered with four units, they may select any five hours out of courses 5, 6, and 7.

Those who wish to secure either a recommendation as teacher of Latin or a teacher's diploma in Latin must elect at least twenty-five hours in the department of Latin beyond course 4; courses 5 and 13 must be included. Other courses especially recommended to those who intend to teach are 7, 9, 10, 12, 50, 59, 60, 61, and education 87. Those who wish to do the best work in Latin will need, in addition to a greater amount of Latin, some Greek and a reading knowledge of German.

PREPARATORY LATIN.—Although College classes are offered which correspond to each year of the high-school Latin course, these classes are open only to those who enter with fifteen accredited entrance units. Entrance units may be made good in the Oread School. Those who submit as entrance units *Cæsar* and *Cicero* without Latin composition are conditioned in composition and must make the deficiency good either by examination or in the Oread School.

1.—**ELEMENTARY LATIN.** Five hours, first semester, at 1:30. Though intended as a preparation for the further study of Latin, this course is planned largely for those whose chief interest is in English or the modern languages; general principles of language structure and development and the influence of Latin on English are stressed as much as possible. Open to all who have had no Latin in the high school.

2.—**CÆSAR** (four books). Five hours, second semester, at 8. Weekly exercises in Latin composition. Open to those who have had course 1 or its equivalent and have not read *Cæsar* in the high school.

3.—**CICERO** (six orations). Five hours, first semester, at 11:15. Weekly exercises in Latin composition. Open to those who have had course 2 or its equivalent and have not read *Cicero* in the high school.

4.—**VERGIL'S ÆNEID** (six books). Five hours, first semester, at 8; and second semester, at 11:15. With the study of mythology and careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Open only to those who have had three units of Latin, not including Vergil. First semester, Murray; second semester, Oliver.

5.—**CICERO** (*De Senectute*). Three hours, first semester, at 9 and 11:15; and second semester, at 9. With prose composition and a thorough review of the grammar. Open to those who have had four units of Latin, recommended to all who expect to take further courses in Latin, and required of all who expect to prepare for teaching Latin. First semester, at 9, Murray; at 11:15, Oliver. Second semester, ———.

6.—**LIVY** (one book). Two hours, first semester, at 9 and 11:15; and second semester, at 9. This course is intended to

accompany course 5, but may be omitted by well-prepared students. First semester, at 9, Murray; at 11:15, ———. Second semester, Murray.

7.—HORACE (Odes). Three hours, first semester, at 9; and second semester, at 11:15. With careful practice in metrical reading. The chief stress is laid on the literary side of the work. Must be preceded by course 4; should be preceded by either 5 or 6. First semester, Oliver; second semester, Murray.

8.—TERENCE (two plays). Two hours, second semester, at 11:15. Must be preceded by course 5. Intended to accompany course 7. Those who must choose between 7 and 8 are advised to take 7. Those who elect it when qualified to elect course 51 will be required to read an additional play. Walker.

9.—CICERO'S LETTERS. Three hours, first semester, at 10:15. The chief stress is laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. Must be preceded by five hours beyond course 4. Walker.

10.—HISTORY OF ROMAN LITERATURE. Two hours, first semester, at 10:15. Mackail's Latin Literature, supplemented by lectures and assigned reading in English translations of the more important authors. Open to all undergraduates except Freshmen, without regard to their Latin preparation. Oliver.

11.—HORACE (Satires and Epistles). Two hours, second semester, Wednesday and Friday, at 10:15. Courses 11 and 12 may well be taken together. Must be preceded by eight hours beyond course 4.

12.—ROMAN PRIVATE LIFE. One hour, second semester, Monday, at 10:15. Johnston's Private Life of the Romans, supplemented by occasional lectures and the use of illustrative material. Must be preceded by five hours beyond course 4. Oliver.

13.—LATIN COMPOSITION. Two hours, second semester, at 10:15. Part I or part II of Nutting's Advanced Latin Composition. Intended to accompany courses 11 and 12, but may be taken earlier by well-prepared students, the only necessary preparation being given in course 5. Required of all who wish a recommendation from the department as teachers of Latin. Murray.

50.—ADVANCED LATIN COMPOSITION. Two hours, first semester, at 1:30. Must be preceded by course 13. Murray.

Each of the following reading courses, 51 to 58, inclusive, must be preceded by at least twelve hours from courses 5 to 13, inclusive.

51.—PLAUTUS. Two hours. (Not given in 1913-'14.)

52.—VERGIL'S ECLOGUES AND GEORGICS. Two hours. (Not given in 1913-'14.)

53.—CATULLUS, TIBULLUS, AND PROPERTIUS. Two hours, second semester, at 10:15. Oliver.

- 54.—PLINY'S LETTERS. Two hours, first semester, at 2:30.
- 55.—LUCRETIUS. Three hours. (Not given in 1913-'14.)
- 56.—THE ANNALS OF TACITUS. Three hours. (Not given in 1913-'14.)
- 57.—JUVENAL. Three hours, second semester, at 9. Murray.
- 58.—LITERATURE OF THE EMPIRE. Three hours, first semester, at 10:15. A study of the history of literature under the empire, supplemented by the reading of portions of the most important works. Oliver.
- 59.—ROMAN POLITICAL INSTITUTIONS. Three hours, first semester, at 1:30. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Must be preceded by courses 1 to 3 or their equivalent. Murray.
- 60.—CÆSAR'S GALLIC CAMPAIGNS. Three hours, second semester, at 1:30. A critical study of the Gallic War, with especial reference to military, historical, and geographical questions. The course is intended primarily as an introduction to the methods of the graduate seminar, and secondarily as a practical course for teachers. Open to Seniors. Walker.
- 61.—VERGIL. (Not given in 1913-'14.) A rapid survey of the contents of the *Æneid*, with a study of the motives of the poem and of Vergil's method of handling his material. A critical study of a few passages which involve difficulties of interpretation or of textual criticism. It is recommended that this course be preceded or accompanied by course 52. Open to Seniors.

LAW.

The following courses in the School of Law are open to College Seniors, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to any of these courses must register in the School of Law as well as in the College and will be admitted to the classes as first-year law students.

- 51.—ELEMENTARY LAW. Two and one-half hours, first half of first semester.
- 52.—AGENCY. Two and one-half hours, second half of first semester.
- 53.—CONTRACTS. Five hours, first semester, at 9.
- 54.—BAILMENTS. Two and one-half hours, first half of second semester.
- 55.—TORTS. Two and one-half hours; second half of first Semester.
- 56.—SALES. Two and one-half hours, first half of second semester.

57.—DAMAGES. Two and one-half hours, second half of second semester.

58.—DOMESTIC RELATIONS. Two and one-half hours, second half of second semester.

MATHEMATICS.

Associate Professor VAN DER VRIES.

Associate Professor ASHTON.

Assistant Professor MITCHELL.

Assistant Professor WHITE.

Assistant Professor JORDAN.

Assistant Professor DUVAL.

Miss MACGREGOR, Instructor.

Mr. WHEELER, Instructor.

EQUIPMENT.—The department of mathematics has a good collection of models in wood, plaster of Paris, and strings illustrating various theorems of geometry and analysis. The library contains about 2000 volumes relating to mathematics. The department also has in its possession a large collection of elementary textbooks, known as the Newson Collection (a gift by Mrs. H. B. Newson from the library of the late Professor Newson), which is of especial value to the prospective teachers, affording an excellent opportunity for comparing various methods of presentation.

ADVICE AS TO CHOICE OF COURSES.—The courses in the department are arranged to meet the needs of four classes of students, as follows: (1) Those who wish to study mathematics for general culture; (2) those who wish to become teachers of mathematics in secondary schools; (3) those who wish to take mathematics in preparation for advanced work in other departments; (4) those who wish to specialize with a view to finding a career in teaching and research in mathematics. The courses are arranged in three groups: The elementary group, open to all undergraduates; a more advanced group, open to Juniors, Seniors, and graduate students; and the graduate courses, open only to graduate students. (For a list of the latter courses see the announcements of the Graduate School.) A short major (thirty hours) should include courses 2 to 8 and thirteen hours chosen from the remaining courses open to undergraduates; a long major (forty hours) should consist of the courses 2 to 8 and twenty-three hours from the remaining courses open to undergraduates.

(1) For general culture all or a part of courses 2 to 9 in proper sequence are recommended; they may be taken two at a time (*i. e.*, 2 and 3, 4 and 5, etc.).

(2) Those wishing to qualify for teachers of mathematics in high schools should complete courses 2 to 9 (twenty hours) and at least ten hours in physics, astronomy, the history and pedagogy of mathematics, and practice teaching in the School of Education.

(3) Students whose major work is in another department where mathematics is needed should consult with the head of the

department in question regarding the mathematical courses he should elect.

(4) Students desiring to specialize in mathematics should take courses 2 to 9 and then consult with the head of the department as to selection of additional courses. Such students are advised to gain a reading knowledge of French and German as early in their course as possible. Usually for this purpose French 1 and 2 and German 1-4 are sufficient; Italian 1 and 2 will also be a great help.

In all cases students should consult with the instructors in the department before electing the advanced courses.

2.—COLLEGE ALGEBRA. Three hours, both semesters—first semester, at 8, 9, 10:15, 11:15, and 2:30; second semester, at 8, 9, and 10:15. Rapid review of elementary algebra; graphic representation; logarithms; determinants; theory of equations; Horner's method of approximation. MacGregor.

3.—PLANE TRIGONOMETRY. Two hours, both semesters—first semester, at 8, 9, 10:15, 11:15, and 2:30; second semester, at 8, 9, and 10:15. The six trigonometric functions; principal formulas of plane trigonometry, trigonometric equations, solution of triangles and practical problems. MacGregor.

4.—ANALYTICAL GEOMETRY I. Two hours, both semesters—first semester, at 9 and 10:15; second semester, at 9 and 11:15. The straight line, circle, elements of parabola, ellipse and hyperbola. Prerequisites, courses 2 and 3. White.

5.—CALCULUS I. Three hours, both semesters—first semester, at 9 and 10:15; second semester, at 9 and 11:15. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates. Open to students who have completed or are taking course 4. Van der Vries.

6.—ANALYTICAL GEOMETRY II. Two hours, both semesters—first semester, at 11:15; second semester, at 10:15. Conic sections; polar coördinates; loci problems; higher plane curves. Prerequisite, course 4. Mitchell.

7.—CALCULUS II. Three hours, both semesters—first semester, at 11:15; second semester, at 10:15. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Prerequisites, courses 5 and 6; may be taken at the same time with course 6. Mitchell.

8.—CALCULUS III.* Three hours, second semester, at 9. Applications of the calculus to curves and surfaces; series, partial differentiation and integration; and a thorough training in the use of the definite integral as the limit of a sum. Prerequisite, course 7. Ashton.

9.—SOLID ANALYTICAL GEOMETRY.* Two hours, second semester, at 11:15. Solid analytical geometry of the straight line, plane, and the conicoids. Prerequisite, course 7. White.

50.—ANALYTIC MECHANICS. Three hours, second semester, at 10:15. This course is recommended to those who desire a more thorough knowledge of the integral calculus and its practical

applications. It will include center of gravity, moments of inertia, and the general theory of rectilinear and curvilinear motion in space. A large number of practical problems will be solved. Prerequisites, courses 2 and 7. Students are also advised to precede this course by physics 50, which will be counted for credit in the mathematics group. Duval.

51.—DIFFERENTIAL EQUATIONS. Three hours, first semester, at 10:15. Ordinary differential equations; integration in series; partial differential equations; applications to geometry and physics. Prerequisites, courses 2 to 7. White.

52.—ADVANCED CALCULUS I. Two hours, first semester, at 11:15. Elliptic integrals; Jacobian elliptic functions; applications to geometry and physics. Prerequisites, courses 2 to 7. Ashton.

53.—ADVANCED CALCULUS II. Three hours, second semester, at 11:15. Critical review of the fundamental notions of calculus; expansion in series; definite integrals; multiple integrals; line, surface and space integrals; functions defined by definite integrals; applications to geometry and physics. Prerequisites, courses 2 to 7. White.

55.—HIGHER ALGEBRA I. Three hours, first semester, at 11:15. A study of selected topics in Fine's College Algebra. The idea of a number field; the development of the number system of algebra; definition of irrational number; fundamental theorems on limits; convergence of infinite series; power series; operations with infinite series; binomial, exponential and logarithmic series; infinite products; solution of cubic and biquadratic equations; theory of equations; Taylor's theorem for polynomials; test for multiple roots. Prerequisites, courses 2 to 7. Mitchell.

56.—HIGHER ALGEBRA II. Two hours, second semester, at 11:15. Selected topics in Bocher's Introduction to Higher Algebra. Fundamental properties of polynomials; properties of determinants; theory of linear dependence; systems of linear equations; linear transformations; multiplication of matrices; bilinear forms; properties of polynomials in general. Prerequisites, courses 2 to 7. Mitchell.

57.—COMPLEX NUMBERS. Two hours, second semester, at 10:15. Analytic and geometric properties of complex numbers; conditions of functionality; integration; circular transformations; applications. Prerequisite, course 55. Ashton.

58.—GALOIS'S THEORY OF EQUATIONS. Two hours, first semester, at 10:15. The application of the method of groups to the study of algebraic equations. Prerequisite, course 55. (Not given in 1913-'14.)

59.—MODERN GEOMETRY I. Three hours, first semester, at 9. Point and line coördinates; principles of duality; methods of abridged notation, reciprocal polars and central projection. Prerequisites, courses 2 to 7. Van der Vries.

60.—MODERN GEOMETRY II. Three hours, second semester, at 9. Homogeneous coördinates; anharmonic ratio; properties of complete quadrangle and complete quadrilateral; pencils and

ranges of conics; collineations and introduction to continuous groups of collineations in the plane. Prerequisite, course 59. Van der Vries.

61.—PROJECTIVE GEOMETRY. Two hours, second semester, at 9. Projective ranges and pencils; collineations; pencils and ranges of conics; the Steinerian transformation; types of cubics; applications. Van der Vries.

62.—HISTORY OF MATHEMATICS. Two hours, first semester, at 9. A topical treatment of the most important movements in the development of the science. Prerequisites, courses 2 to 7. Mitchell.

MEDICINE.

The College student who has completed the Sophomore year and desires to secure the degree of bachelor of arts and doctor of medicine can complete the first and second years of the medical curriculum and finish the College course at the same time. To do this he must register in both the College and the School of Medicine and select from the curriculum of the School of Medicine those courses which are offered by the various departments of the College. These courses, common to both schools, aggregate twenty-one hours. In addition to these the student will elect, under the advice of the medical faculty, fourteen hours additional work in the College. He will also be admitted to medical courses, not given by the College, aggregating twenty-five hours. Having thus secured credit for sixty hours, he will be entitled to the degree of bachelor of arts.

The courses which are included in the curriculum of the Medical School and which are offered by the various departments of the College are as follows: Physiological Chemistry, 5 hours; Physiology, 5 hours; Bacteriology, 5 hours; Toxicology, 1 hour.

The following courses given in the School of Medicine are open to College Juniors and Seniors.

51.—DESCRIPTIVE ANATOMY. Eight hours.

52.—DESCRIPTIVE ANATOMY. Seven hours.

53.—GENERAL PATHOLOGY. Five hours.

54.—HISTOLOGY. Three hours.

55.—EMBRYOLOGY. Two hours.

MINERALOGY. (See Geology.)

MUSIC.

Professor SKILTON.

Courses 50 and 51 are College courses and are open to all Juniors and Seniors.

Courses 52 to 60 are courses in the School of Fine Arts and are open to College Seniors, but not more than fifteen hours may be counted towards the degree of bachelor of arts. Students desiring admission to these courses must register in the School of Fine Arts as well as in the College and will be admitted to the classes as fine arts students.

50.—MUSICAL APPRECIATION. Two hours, first semester, at 10:15. A course for those who wish to learn to understand music as listeners, without necessarily being performers. The different styles of music are explained and illustrated, with special reference to the University concerts. Skilton.

51.—DEVELOPMENT OF MUSIC. Two hours, second semester, at 10:15. Detailed examination of famous composers, with reference to the history of their time and country. Skilton.

52.—HARMONY. Two hours.

53.—HARMONY. Two hours.

54.—HARMONY. Two hours.

55.—HARMONY. Two hours.

56.—COUNTERPOINT. One hour.

57.—COUNTERPOINT. One hour.

58.—MUSICAL COMPOSITION. One hour.

59.—MUSICAL COMPOSITION. One hour.

60.—INSTRUMENTATION. One hour.

PHARMACY.

Professor SAYRE.

Assistant Professor EMERSON.

50.—PHYSIOLOGICAL CHEMISTRY. Five hours, second semester, 1:30 to 3:30. For College and medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. The study of fats, carbohydrates, proteins, and the normal and abnormal products of animal life. Five weeks of urinalysis, embracing lectures, recitations, and laboratory work. Sayre and Emerson.

51.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Analysis of dietetics used in medicine, quantitative valuation of proximate constituents of foods, assay of digestive ferments, and the separation of organic principles of animal tissues, etc. Sayre and Emerson.

PHILOSOPHY.

Professor TEMPLIN.

Professor BOODIN.*

Assistant Professor ROGERS.

Assistant Professor MITCHELL.

Mr. DOCKERAY, Instructor.

EQUIPMENT.—This department occupies a suite in the east wing of the new Administration Building, including classrooms, a reading room held jointly with the mathematics department and the psychological laboratory. The philosophical library includes over 2700 volumes, most of which are on the shelves of the reading room for ready reference by students. The laboratory comprises twelve rooms equipped both for class work and research.

* On leave of absence.

1.—ELEMENTS OF PSYCHOLOGY.* Three hours, both semesters, at 8, 10:15, and 11:15. A general study of mental processes. This course is a prerequisite to all other courses in the department, but it may be taken at the same time with one or more from courses 2, 3, and 4. It is required for admission to the School of Education. Rogers, Dockeray.

2.—LABORATORY PSYCHOLOGY.* Two hours, both semesters, at 1:30 to 3:30 on Tuesday and Thursday, and 8 to 12 on Saturday. Laboratory experiments, analyzing and illustrating mental processes. Lectures, assigned readings and reports. Must be preceded or accompanied by course 1. Dockeray.

3.—ELEMENTARY LOGIC.* Two hours, both semesters, at 9 and 2:30. Textbook course for beginners, presenting the elementary principles of deduction, induction, and circumstantial evidence. Must be preceded or accompanied by course 1. Mitchell.

4.—INTRODUCTION TO PHILOSOPHY.* Three hours, both semesters, at 9 and 2:30. Textbook course for beginners, presenting the general nature of philosophical problems and of the relation of philosophy to science, religion, and art. Should be preceded by elementary courses in the biological and physical sciences. Must be preceded or accompanied by course 1. Mitchell.

51.—PSYCHOLOGY OF THOUGHT. Three hours, first semester, at 11:15. A study of the processes of attention, association, inhibition, imagination, memory, conception, reasoning, and belief. Lectures, assigned readings, and reports. Must be preceded by course 1. Dockeray.

52.—FEELING AND WILL. Two hours, second semester, at 1:30. A study of the processes of reaction, habit and skill, instinct, feeling, emotion, effort, fatigue, and volition. Experiments, lectures, assigned readings, and reports. Must be preceded by course 1.

53.—COMPARATIVE PSYCHOLOGY. Three hours, second semester, at 11:15. This course aims to present the development of mental behavior through the animal series. The work consists of lectures, assigned readings, and experiments with animals. Students who show ability for advanced work will be given an opportunity for original investigation. Must be preceded by course 1. Dockeray.

54.—PSYCHOTHERAPY. Two hours, second semester, at 11:15. A study of mental processes and psychotherapeutic methods in their bearing on individual and social hygiene. Sleep, fatigue, emotion, suggestion, hypnotism, psychoanalysis and reëducation are among the topics of discussion. Must be preceded by course 1. Rogers.

55.—ADVANCED PSYCHOLOGY I. Two to five hours, first semester, by appointment. Sensation, perception, and other

special topics. Must be preceded by at least two previous courses in psychology. Rogers, Dockeray.

56.—ADVANCED PSYCHOLOGY II. Two to five hours, second semester, by appointment. A continuation of course 55, with the same prerequisites, but not necessarily preceded by it. Rogers, Dockeray.

57.—SOCIAL PSYCHOLOGY. Two hours, first semester, at 11:15. A study of those mental processes which are most involved in social relations, and of some special topics in applied psychology. The following subjects are included: Social factors in mental development; the social instincts and emotions; the psychology of language, art, literature, belief, religion, and morality; applications of psychology in business, politics, law, and vocational guidance. Must be preceded by course 1. Rogers.

58.—CHILD PSYCHOLOGY. Two hours, second semester, at 9. The mental development of the child, with special reference to home conditions. Must be preceded by course 1. Rogers.

60.—HISTORY OF ANCIENT PHILOSOPHY. Three hours, first semester, at 10:15. The principal movements or tendencies of Greek thought, with special reference to Plato and Aristotle. Prerequisites, courses 1 and 3 or 4. Mitchell.

61.—HISTORY OF MODERN PHILOSOPHY. Three hours, second semester, at 10:15. The development of modern thought from the Renaissance. A natural sequel to course 4 as well as to course 60. Several topics only glanced at in the introductory course are studied here in more detail. Prerequisites, courses 1 and 3 or 4. Mitchell.

62.—PHILOSOPHICAL CLASSICS. Two hours, first semester, at 10:15. This course furnishes an opportunity for a first-hand study of some of the more important works in the history of philosophy. The authors read vary with succeeding terms. Must be preceded or accompanied by course 60 or 61.

63.—PHILOSOPHICAL CLASSICS. Two hours, second semester, at 10:15. A continuation of course 62.

64.—THE THEORY OF KNOWLEDGE. Three hours, first semester, by appointment. This course deals with the problem of the relation of truth to reality with special reference to idealism and pragmatism. Prerequisites, courses 1 and 60 or 61.

65.—METAPHYSICS. Three hours, second semester, by appointment. This course deals with some of the important tendencies in contemporary thinking. Prerequisites, courses 1 and 60 or 61.

66.—THE PHILOSOPHY OF RELIGION. Two hours, second semester, at 9. This course aims to interpret the religious consciousness, first by tracing the evolution of religion, and further on taking up the modern idealistic and pragmatistic interpretation of religion. Prerequisites, courses 1 and 60 or 61.

67.—ADVANCED LOGIC. Three hours, second semester, at 1:30. A sequel to course 3, with attention to some of the philosophical

aspects and problems of logic. A textbook is used, and considerable outside reading is required. Prerequisites, courses 1 and 3. Mitchell.

70.—SYSTEMATIC ETHICS. Three hours, first semester, at 8. This course undertakes a critical examination into the psychological foundations of human conduct, a review of the historic ethical theories, and the development of a satisfactory ethical system. Prerequisites, courses 1 and 4. Templin.

71.—PRACTICAL ETHICS. Two hours, second semester, Monday and Wednesday, at 8. The application of theoretical principles of conduct to practical problems of life. Prerequisite, course 70. Templin.

72.—ESTHETICS. Two hours, second semester, Tuesday and Thursday, at 8. A historical and constructive treatment of the problem of the beautiful, followed by an application of esthetic principles to nature and the fine arts. Prerequisites, courses 1 and 4. Templin.

PHYSICAL EDUCATION.

Professor NAISMITH.
Associate Professor JOHNSON.
Associate Professor HAMILTON.
Mr. ROOT, Instructor.
Mr. MOSSE, Instructor.
Mr. FRANK, Instructor.
Miss BECKWITH, Instructor.

For equipment, see under Gymnasium.

ADVICE AS TO CHOICE OF COURSES.—Courses 50, 52 and 54 are designed for those who intend to teach this subject. Course 51 is arranged with reference to the course in domestic science.

1.—FRESHMAN.** Men: First half semester, outdoor athletics, swimming; second half semester, basket ball, diving. Women: First half semester, indoor games, swimming; second half semester, calisthenics, gymnastics, marching.

2.—FRESHMEN.** Men: First half semester, calisthenics, gymnastics, marching; second half semester, outdoor games, athletics and water sports. Women: First half semester, calisthenics, gymnastics and folk games; second half semester, competitive work, swimming.

3.—SOPHOMORE. Men: First half semester, outdoor athletics, rescue swimming; second half semester, basket ball and other team games. Women: First half semester, indoor games, playground drills; second half semester, folk games, gymnastics and basket ball.

4.—SOPHOMORE. Men: First half semester, defensive sports; second half semester, squad leading, coaching, aquatic sports. Women: First half semester, gymnastics, fancy marches; second half semester, fencing, team games, rescue swimming.

Those physically qualified may elect the following in their season, in place of the foregoing: Football, baseball, tennis, basket ball, track and field athletics, hockey, and lacrosse. This

work must be under the appointed coach or leader, in order to obtain credit.

Additional courses will be arranged for special work and prescribed work which can not be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart. Where needed, special exercises will be prescribed.

Every student using the gymnasium or who is a candidate for any University team must pass a satisfactory medical and physical examination.

5.—HYGIENE.** One hour, first semester, men, Monday; women, Thursday. Lectures designed to help the students to maintain health, dealing with food, clothing, exercise, conditions conducive to study, prophylactic treatment, especially in regard to infectious and contagious diseases. Required of Freshmen.

50.—MECHANICAL ANATOMY. Three hours, first semester, 8 to 10. The study of the bones, articulation and muscles in their relations as mechanical principles. The location of the viscera. The distribution of the principal nerves and blood vessels, and the topography of the muscles. Naismith.

51.—PHYSICAL EDUCATION OF CHILDREN. Three hours, second semester, at 8. Including the growth of the child and conditions that affect its development; effect of physical, mental and emotional strain. Relation of physical condition to the development of character and mental ability; methods of obtaining the best results. Belongs to the domestic-science group and limited to women. Naismith.

52.—ANTHROPOMETRY. Two hours, second semester, at 9. Medical, physical and functional examinations; tabulation and use of the data of examinations. Prerequisites, course 50 and elementary physiology. Naismith.

54.—PRINCIPLES OF PHYSICAL EDUCATION. Three hours, second semester, at 9. Laboratory periods by appointment. Dealing with the effects of exercise on the various systems of the body; history of the subject; prescription of exercise, and mechanical therapeutics. Prerequisites, course 50 and elementary physiology. Naismith.

PHYSICS AND ASTRONOMY.

Professor KESTER.

Associate Professor M. E. RICE.

Assistant Professor STIMPSON.

Mr. T. T. SMITH, Instructor.

Dr. R. K. YOUNG, Instructor.

EQUIPMENT.—The department occupies Blake Hall. The lecture rooms, laboratory and research rooms of the building are well supplied with water and gas and with various electrical circuits; the laboratory and research rooms are provided with piers, free from vibrations. A well-equipped shop and the services of an instrument maker are available for the construction

of apparatus needed for special work. The equipments of apparatus for demonstration and regular laboratory work and for special investigation are good and are being increased constantly by well-chosen additions.

The physics library contains a fine collection of standard treatises, both elementary and advanced. American, English, German, French and Italian journals of the science are at hand, with bound volumes for twenty-five to forty years; the files of the more important journals have been extended back seventy and ninety years. The published transactions and proceedings of a large number of the important physics societies of the world add notably to the value of the library for use in special fields of investigation.

The material equipment in astronomy consists of a six-inch telescope, made by Alvin Clark & Sons, on a portable equatorial tripod mounting; a two-inch terrestrial telescope on a portable altazimuth mounting; a two-inch transit instrument; a sextant; a spectroscope for attachment to the six-inch telescope; two chronometers, one a break-circuit instrument; a chronograph; a twenty-inch celestial globe; 600 astronomical slides; star charts, atlases, maps, drawings, etc. In addition, the equipment in physics is available for demonstrations and for laboratory work.

The astronomical library contains about 600 volumes, including some of the more important journals of the science.

ADVICE AS TO CHOICE OF COURSES.—*Physics*.—The courses in physics are arranged to give, first, a general survey of the whole subject in the elementary and general courses (1, and 5 and 6); second, a more intensive study of the well-defined fundamental parts of the science in the courses 50 to 53 (with appropriate laboratory courses 54 to 57); and third, an opportunity to enter the more special fields in the courses 58 to 66. Courses 1 (elementary physics) and 5 and 6 (general physics), or their equivalents, are necessary for enrollment in any other course in physics. It is desirable that course 5 precede course 6. They are open to all students of the College. Courses 50 to 66 are open to Juniors and Seniors and to graduate students. Courses 50, 51, 52, and 53, with accompanying laboratory courses, should all be taken by students making physics their major, and courses 60, 61, and 65, 66 may be added. Courses 60, and 65, 66 do not presuppose the calculus. Students expecting to do advanced work in physics should obtain as early as practicable a working knowledge of the calculus. A reading knowledge of German and French is desirable for those who elect the advanced courses, and is essential for graduates. Members of the department are glad to confer with students who intend to major in physics, and with those who intend to teach this science in high schools, as to the choice of courses best adapted to their needs.

Astronomy.—Students wishing only a general knowledge of the subject are advised to begin with Astronomy 1 and 2, and to follow these, if possible, with course 68. The courses 68 to 72 are designed for those who wish to make astronomy a major study. The courses following 68 should be preceded either by

68 or by 1, and should be taken in order, with the exception of 70, which may be taken at any time subject to the necessary prerequisites.

Physics.

1.—ELEMENTARY PHYSICS. Five hours, first semester, Monday, Wednesday, and Friday, at 9, and Tuesday and Thursday, 8 to 10. A first course in physics, intended to give a brief survey of the subject. Recitations and laboratory, with some lectures and problems. Prerequisites, algebra and plane geometry. Not open for credit to students having credit in entrance physics. Stimpson.

5a.—GENERAL PHYSICS I. Mechanics, sound and light. Three hours, second semester, Monday, Wednesday, and Friday, at 2:30. Lectures, recitations and problems. Prerequisites, a first course in physics and some knowledge of plane trigonometry. Course 5a should be accompanied by 5b. Kester, Smith.

5b.—GENERAL PHYSICS LABORATORY I. Mechanics, sound and light. Two hours, second semester, Tuesday and Thursday, 1:30 to 3:30, or Saturday, 8 to 12. Coördinate with 5a, with the same prerequisites. Courses 5b must be accompanied by or preceded by 5a. Smith.

6a.—GENERAL PHYSICS II. Heat and electricity. Three hours, first semester, Monday, Wednesday, and Friday, at 2:30. A continuation of course 5, with the same prerequisites. It is desirable that physics 5 precede this course, though not necessary. Course 6a should be accompanied by 6b. Kester, Smith.

6b.—GENERAL PHYSICS LABORATORY II. Two hours, first semester. Sound, light and electricity. Two hours, Tuesday and Thursday, 1:30 to 3:30, or Saturday, 8 to 12. Coördinate with 6a, with the same prerequisites. Course 6b must be accompanied by or preceded by 6a. Smith.

50.—MECHANICS AND HEAT. Three hours, first semester, Tuesday, Thursday, and Saturday, at 8. Lectures and recitations. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Kester.

It is recommended that this course be followed by Mathematics 50, Analytical Mechanics, three hours.

51.—LIGHT AND RADIANT ENERGY. Three hours, second semester, at 8. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Offered in alternate years. Smith.

52.—ELECTRICITY. Three hours, first semester, at 9. Lectures, recitations and problems. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Rice.

53.—RADIOACTIVITY AND CONDUCTION OF ELECTRICITY THROUGH GASES. Three hours, second semester, Tuesday, Thursday, and Saturday, at 8. Prerequisites, courses 5 and 6, or 1E and 2E, and calculus. Offered in alternate years. Kester. (Not offered in 1913-'14.)

Courses 50, 51, 52 and 53 are designed to form a two-year cycle for theoretical treatment of the essentials of the subject matter of physics. The cycle

is offered especially for Juniors and Seniors who are taking their major in physics. Either year of it is acceptable as a minor for graduate students who are working for the master's degree with their major in another department. An opportunity is offered in the laboratory courses 54 to 59 for experimental work which shall supplement to any desired extent the theoretical development of a given branch of the subject.

54.—PHYSICS LABORATORY. Mechanics and heat. Two to five hours' credit, first semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E. Kester.

55.—PHYSICS LABORATORY. Light and radiant energy. Two to five hours' credit, second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Smith.

56.—PHYSICS LABORATORY. Electricity. Two to five hours' credit, each semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Rice.

57.—PHYSICS LABORATORY. Radioactivity and conduction of electricity through gases. Two to five hours' credit, second semester, by appointment. Prerequisites, physics 5 and 6, or 1E and 2E, or their equivalents. Kester.

Courses 54, 55, 56, 57 are coördinate with 50, 51, 52, 53, with the same prerequisites, and supplement them from an experimental point of view.

58.—ADVANCED LABORATORY I. Two to five hours' credit, first semester, by appointment. A continuation of courses 54 to 57; requires at least two semesters' credits in these courses. The development is supposed to make possible, during the year, a repetition of some of the classical researches in physics. Kester. Rice.

59.—ADVANCED LABORATORY II. Two to five hours' credit, second semester, by appointment. A continuation of course 58. Kester, Rice.

60.—OPTICAL INSTRUMENTS. Three hours, second semester, at 8. The course is so designed as to pay special attention to the resolving power of optical instruments in general and to give an introduction to the science of spectroscopy. Offered in alternate years. Smith. (Not offered in 1913-'14.)

61.—ALTERNATING AND OSCILLATING CURRENTS. Three hours, second semester, Monday, Wednesday, and Friday, by appointment. Lectures, recitations and problems. A continuation of course 52, dealing with the mathematical theory of alternating and oscillating currents and the propagation of varying electric currents in wires. Prerequisites, course 52 and some work in course 56, or equivalent, and a good working knowledge of calculus. Offered in alternate years. Rice.

63.—PHYSICS COLLOQUIUM I. One hour, first semester, by appointment. The members and the advanced students of the department meet once a week to report on researches published in the journals of the science and on the progress of original investigations carried on by members of the colloquium.

64.—PHYSICS COLLOQUIUM II. One hour, second semester, by appointment. A continuation of course 63.

65.—RECENT ADVANCES IN PHYSICS I. One hour, first semester, Tuesday, at 9. Prerequisites, courses 5 and 6 or 1E and 2E. A treatment, wherever possible in the form of experimental demonstration, of late developments in the science, such as do not receive treatment regularly in courses and in textbooks.

66.—RECENT ADVANCES IN PHYSICS II. One hour, second semester, Tuesday, at 9. Continuation of course 65.

Astronomy.

10.—DESCRIPTIVE ASTRONOMY. Three hours, first semester, at 9. An elementary course serving as an introduction to the subject. Young.

11.—OBSERVATIONAL ASTRONOMY.* Two hours, first semester. Stress is laid on methods which may be carried on without the aid of large instruments, and which can be continued by the student independently. Prerequisites, trigonometry and astronomy 10. One evening and one afternoon a week. Young.

80.—GENERAL ASTRONOMY I. Three hours, first semester, at 10. A comprehensive treatment of the subject, based on Young's General Astronomy, supplemented by reference to current astronomical literature. Prerequisites, elementary trigonometry and physics. Young.

81.—GENERAL ASTRONOMY II. Three hours, second semester, at 10. A continuation of 80. Young.

82.—SPHERICAL AND PRACTICAL ASTRONOMY I. Two hours, one lecture and one laboratory period during the first semester, by appointment. Transformation of coördinates, time, sextant, transit, refraction. Prerequisites, descriptive astronomy, trigonometry, and calculus. Young.

83.—SPHERICAL AND PRACTICAL ASTRONOMY II. Two hours, one lecture and one laboratory period during the second semester, by appointment. A continuation of 82. Young.

84.—INTRODUCTION TO ASTROPHYSICS. Three hours, first semester, by appointment. A study of the principles, methods and instruments employed in investigating the physical condition of celestial bodies. Prerequisites, astronomy 10, physics 5 and 6 or equivalent, and the calculus. Young.

85.—THEORETICAL ASTRONOMY. Three hours, second semester, by appointment. Methods of computing the orbits of planets and comets. Prerequisites, astronomy 10, and the calculus. Young.

86.—PRACTICAL WORK IN COMPUTING. To be taken in conjunction with 85. Two hours' credit. Young.

PHYSIOLOGY.

Professor HYDE.

Assistant Professor CHILLINGWORTH.

Miss WALLING, Instructor.

Mr. CURL, Assistant Instructor.

EQUIPMENT.—The physiology department is thoroughly equipped with approved modern apparatus for demonstration and experimental work. Besides a large lecture room, it pos-

sesses a department library for the use of the students, and a large laboratory that contains tables particularly designed for experimental work. The research room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments.

ADVICE AS TO CHOICE OF COURSES.—Course 1 is recommended especially to general students. Course 2 is for advanced work.

1.—ELEMENTARY PHYSIOLOGY. Five hours, both semesters, three days at 1:30 or 2:30 or 3:30, and two days from 1:30 to 3:30 or 3:30 to 5:30. The first half is a general elementary course in physiology, devoted to a study of the structure and functions of the human body, by means of lectures, demonstrations, recitations, and laboratory experiments. The second half consists in the study of the elements of hygiene and sanitation. Hyde, Walling, and Curl.

2.—GENERAL PHYSIOLOGY.* Five hours, both semesters, three days at 10:15 or 3:30, and two days from 10:15 to 12:15 or 3:30 to 5:30. Lectures, demonstrations, recitations, and laboratory experiments. A general course in physiology designed for those who intend to teach or to specialize in the sciences. Prerequisite, course 1 or an equivalent. Hyde and Walling.

50.—EXPERIMENTAL PHYSIOLOGY. Five hours, either semester or both, by appointment. Investigation of special subjects. Prerequisites, courses 1 and 2, or equivalent. Hyde.

51.—ADVANCED EXPERIMENTAL PHYSIOLOGY. Five hours, either semester or both, by appointment. Experimental physiology and original research. Hyde.

52.—PHYSIOLOGY. Three hours, second half of first semester, 8 to 12:15. Recitations and lectures, with demonstrations, conferences and laboratory experimental work. Prerequisite, anatomy and physical chemistry. Required of second year medical students. Chillingworth.

53.—PHYSIOLOGY. Five hours, second semester, 8 to 11:15. A continuation of course 52. Required of second year medical students. Chillingworth.

PSYCHOLOGY. (See Philosophy.)

PUBLIC SPEAKING AND DEBATE.

Assistant Professor GESELL.

EQUIPMENT.—The special equipment of this department includes a collection of more than 200 books, to which carefully selected modern works dealing with debating and public addresses are added yearly. A room in Fraser Hall is specially fitted up for the work in public speaking, and the University chapel and other rooms are available for class recitations and individual practice. Moreover, the students in the department are required to make constant use of books in the English, his-

tory and political science, economics and sociology, education, and other collections, as well as of the various current periodicals.

ADVICE AS TO CHOICE OF COURSES.—The courses here offered are carefully articulated units, and are so arranged as to make possible a systematic study of public speaking during the Sophomore, Junior and Senior years. The work of the Sophomore year is given over to the composition of public addresses, for the principle of instruction is that right speaking depends upon right thinking. Attention is first given, therefore, to securing good mental action rather than the technique of delivery.

Students fitting themselves for the law or the ministry, for politics or social service, are urged to elect the entire series of courses offered. The University of Kansas participates in debates with the universities of Oklahoma, Colorado and Missouri. For these contests, the courses in public speaking are designed to give preparation. Men desiring to make intercollegiate debates are advised to consider courses 1, 52 and 53.

In addition to the courses in the composition and delivery of public addresses, provision will be made in 1913-'14 for courses designed to give preparation in interpretative reading and dramatic presentation.

Course 1 is fundamental and should precede the advanced work of the Junior and Senior years. Course 1 is a requisite for courses 52 and 53.

All students in the department are advised to join one of the literary societies of the University and to take part when possible in University debating contests. Members of University debating teams who enroll in course 53 may substitute their team work for part of the required class exercises.

1.—**THE PRINCIPLES OF ARGUMENTATION.*** Three hours, both semesters, at 8. This course is fundamental in public speaking and is recommended to Sophomores. Training is given in analysis, brief-drawing, evidence, refutation, and persuasion. Prerequisites, courses 1 and 2 in rhetoric.

2.—**EXTEMPORE SPEAKING.*** Two hours, second semester, at 9 and 10:15. Weekly addresses based upon prepared outlines. Topics are assigned in the field of American history, politics and current events. Careful preparation of material is required; the plan of the speech is made in advance, but the choice of language is left for the moment of speaking. Sophomores are advised first to take course 1. Gesell.

50.—**PRACTICAL PUBLIC SPEAKING.** Two hours, first semester, Tuesday and Thursday, at 9, also individual conferences at hours to be arranged. Planned to meet the demands of the lawyer, minister, teacher and others who meet through the medium of speech. Daily practice in the presentation of the various forms of public address, analysis, gesture, bearing, and effective presentation. Gesell.

52.—**DEBATING.** Two hours, first semester, at 8. Practical work in brief-drawing, the handling of evidence and debating. This course is based on course 1 but is especially concerned with

the presentation of the argument. The class is limited in number and the course can be taken only with the consent of the instructor. Gesell.

53.—DEBATING. Two hours, second semester, at 8. This course is a continuation of course 52 and is open only to members of the University debating squad. Assistant Professor Gesell.

54.—PUBLIC DISCUSSION. Two hours, first semester, at 10:15. Study of current political problems with training in the discriminating use of sources and in effective presentation. Gesell.

ROMANCE LANGUAGES AND LITERATURES.

Professor GALLOO.
 Assistant Professor NEUENSCHWANDER.
 Assistant Professor OWEN.
 Assistant Professor WARD.
 Assistant Professor WINTER.
 Assistant Professor COWPER.
 Miss GARDNER, Instructor.
 Miss ENKE, Instructor.
 Miss STANTON, Instructor.

EQUIPMENT.—The department of Romance Languages and Literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., illustrating the history, architecture, life and general culture of the Romance nations.

The Romance library of the University contains 4003 volumes, which cover in a representative way the literary development of France, Spain and Italy, from the earliest times to the present day, and the greater monuments of Portuguese literature. Twenty-five periodicals are received, which include all the important literary and philological journals devoted to the Romance languages.

French.

ADVICE AS TO CHOICE OF COURSES.—Courses 1, 2, 3, 4 and 6 must, and the literature courses should, as far as possible, be taken in the catalogue order. It is recommended that the latter be accompanied by corresponding courses in mediæval or modern European history.

In order to take up the study of the historical development of any of the Romance languages, it is essential that students be well grounded in Latin. They should also have a reading knowledge of German.

Graduate work in this department presupposes acquaintance with elementary Spanish and Italian.

The head of the department will, on application, outline a course for students intending to specialize in, or teach, French.

1.—ELEMENTARY FRENCH I. Five hours, first semester, at 8, 9, 10:15, 11:15, or 1:30; also given in the second semester, at 8, 11:15, and 1:30. Not open to Juniors and Seniors, who must enroll in course 50. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence and elementary syn-

tax. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section reciting at 8. NeuenSchwander, Ward, Winter, Cowper, Stanton.

2.—ELEMENTARY FRENCH II. Five hours, second semester, at 8, 9, 10:15, 11:15, or 1:30; also given in the first semester, at 8 and 11:15. A continuation of course 1. Not open to Juniors and Seniors, who must enroll in course 51. Reading of simple prose texts, with exercises in dictation and elementary composition. NeuenSchwander, Ward, Winter, Cowper, Stanton.

3.—MODERN FRENCH PROSE WRITERS. Three hours, both semesters—first semester, at 9 and 11:15; second semester at 9. Translation and reading of works of Mérimée, George Sand, Anatole France, and René Bazin. Prerequisite, course 2. NeuenSchwander, Ward, Stanton.

4.—COMPOSITION. Two hours, both semesters—first semester, at 9; second semester, at 10:15. Written exercises, intended chiefly as a grammatical review. Oral exercises. Dictation. May be taken in conjunction with course 3 or course 6. Winter, Cowper.

5.—SCIENTIFIC FRENCH. Three hours, second semester, at 1:30. Open to students who are specializing in the sciences and who need an accurate and ready understanding of scientific French. Prerequisites, courses 1 and 2. Cowper.

6.—FRENCH PROSE AND POETRY. Three hours, both semesters, at 10:15. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Prerequisites, courses 3 and 4. NeuenSchwander, Stanton.

7.—COMPOSITION. Two hours, second semester, at 11:15. A continuation of course 4, intended to provide additional practice in writing and speaking French. NeuenSchwander, Stanton.

8.—CORNEILLE AND RACINE. Two hours, both semesters, at 11:15. Reading of four or five of the greatest tragedies of each poet. Prerequisites, courses 4 and 6. Ward, Stanton.

9.—Oral FRENCH COMPOSITION. Three hours of credit, daily, second semester, at 11:15. This course is conducted entirely in French. The idiomatic use of the spoken tongue is emphasized. Prerequisites: courses 3, 4 and 6, but students who have shown marked ability in courses 3 and 4 may omit 6. Cowper, Stanton.

10.—MOLIERE. Three hours, first semester, at 11:15. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Galloo.

11.—COMPOSITION, WRITTEN AND ORAL. Two hours, first semester, at 11:15. Practice in writing and speaking French. Galloo.

12.—ADVANCED COMPOSITION. Two hours, second semester, at 11:15. Translation, original composition, and practice in speaking French. Prerequisite, course 10. NeuenSchwander.

50.—ELEMENTARY FRENCH I. Five hours, first semester, at 10:15. Required of Juniors and Seniors who are beginning

French. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with French and wider reading than can be accomplished in the usual elementary courses for Freshmen and Sophomores. Galloo.

51.—ELEMENTARY FRENCH II. Five hours, second semester, at 10:15. A continuation of course 50. Galloo.

52.—HISTORY OF EARLY FRENCH LITERATURE. Three hours, first semester, at 9. From the earliest times to the classical period. Lectures, recitations, and private readings. Galloo.

53.—HISTORY OF MODERN FRENCH LITERATURE. Three hours, second semester, at 9. From the beginning of the classic period to the present day. Lectures, recitations and private readings. Galloo.

54.—FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Two hours, second semester, by appointment. A study of the development of French literature from the Renaissance to the end of the reign of Louis XIV. Stanton.

55.—FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Two hours, second semester, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau, and the encyclopedists; the dramatists. Neuen Schwander.

56.—THE ROMANTIC SCHOOL I. Three hours, first semester, at 9. A study of the rise of romanticism in France and of its characteristic products in poetry and the drama. Lamartine, A. de Vigny, and A. de Musset. Galloo.

57.—THE ROMANTIC SCHOOL II. Two hours, second semester, at 9. This is a continuation of course 56, and is devoted chiefly to Victor Hugo's works. Galloo.

58.—DEVELOPMENT OF THE FRENCH NOVEL I. Two hours, first semester, at 9. A survey of the novel in the seventeenth and eighteenth centuries. Galloo.

59.—DEVELOPMENT OF THE FRENCH NOVEL II. Three hours, second semester, at 9. The novel in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Galloo.

60.—THE FRENCH DRAMA. Three hours, second semester, at 1:30. A study of the development of the drama in France from the origin to the close of the nineteenth century. Lectures, recitations, and written reports. Stanton.

61.—OLD FRENCH. Two hours, first semester, by appointment. An introduction to French philology. *Chrestomathie de l'ancien français* (Constans). Galloo.

62.—OLD FRENCH. Two hours, second semester, by appointment. A continuation of course 61. Reading of the *Extraits de la Chanson de Roland* (Gaston Paris), with special attention to the phonetic changes and the inflections. Galloo.

Spanish.

21.—ELEMENTARY SPANISH I. Five hours, first semester, at 9, 11:15, or 1:30; also given in the second semester, at 9 and 1:30. Not open to Juniors and Seniors, who must enroll in course 50. An outline of grammar (Hills and Ford). Reading of short stories. Elementary composition. Prerequisite, three years of foreign language. Students who have had less than three years of foreign language form a section, reciting at 1:30. Owen, Winter, Enke.

22.—ELEMENTARY SPANISH II. Five hours, second semester, at 9 or 1:30; also given in first semester, at 10:15 and 1:30. Grammar and composition. Reading of easy modern prose: Carrión-Aza, Pérez Galdós, Caballero, etc. Owen, Winter, Enke.

23.—MODERN SPANISH PROSE WRITERS. Three hours, both semesters, at 10:15. Translation and reading of representative works of Alarcón, Pereda, Valera, Valdés. Prerequisite, course 2. Owen.

24.—COMPOSITION. Two hours, first semester, at 10:15. Systematic training in writing and speaking Spanish. Ramsey's Textbook of Modern Spanish; Umphrey's Spanish Prose Composition. Must be preceded or accompanied by course 3. Enke.

25.—SPANISH PROSE AND POETRY. Three hours, second semester, at 10:15. Specimens of the work of the poets and prose writers of the eighteenth and nineteenth centuries. Must be preceded or accompanied by course 4. Owen.

26.—ADVANCED COMPOSITION. Two hours, second semester, at 10:15. Translation into Spanish of English prose, original composition, and practice in speaking Spanish. Must be preceded or accompanied by course 5. Enke.

27.—ORAL COMPOSITION. Three hours of credit, daily, second semester, at 11:15. This course is conducted wholly in Spanish. The idiomatic use of the spoken tongue is emphasized. Prerequisites, courses 3, 4 and 6, save that students who have shown marked ability in courses 3 and 4 may omit 6. Owen, Enke.

70.—ELEMENTARY SPANISH I. Five hours, first semester, at 9. Required of Juniors and Seniors who are beginning Spanish. The aim of this course is to give some insight into the fundamental principles of language, together with a more comprehensive acquaintance with Spanish and wider reading than can be accomplished in the usual elementary courses for Freshmen and Sophomores. Owen, Enke.

71.—ELEMENTARY SPANISH II. Five hours, second semester, at 9. A continuation of course 50. Owen, Enke.

72.—DON QUIJOTE. Three hours, second semester, at 2:30. A careful reading of the first part, together with outside reading and reports covering the more famous chapters of the second part. Owen, Enke.

73.—HISTORY OF EARLY SPANISH LITERATURE. Three hours, first semester, at 1:30. From the earliest times, through the classic period. Lectures, recitations and private readings. Owen.

74.—HISTORY OF MODERN SPANISH LITERATURE. Three hours, second semester, at 1:30. From the classic period to the present day. Lectures, recitations and private readings. Enke.

75.—THE SPANISH NOVEL OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. Two hours, first semester, by appointment. The *Novelas ejemplares* of Cervantes, *Lazarillo de Tormes*, and other picaresque novels. The Spain of the period. Lectures, collateral reading and reports. Owen.

76.—THE CLASSIC SPANISH DRAMA. Two hours, second semester, by appointment. Tirso de Molina, Lope de Vega, Calderón, and Ruiz de Alarcón. Careful study of selected plays from each dramatist; more rapid reading of others. Schack's Spanish Dramatic Literature. Owen.

Italian.

Students are advised to take, as preparation, courses 1 and 2 in French.

31.—ELEMENTARY ITALIAN I. Three hours, first semester, at 11:15. Grammar. Reading, Marinoni's Reader. Ward, Stanton.

32.—ELEMENTARY ITALIAN II. Continuation of course 1. Three hours, second semester, at 11:15. Grammar, composition, and reading of works of Manzoni, Edmondo de Amicis and other modern writers. Ward, Stanton.

33.—GRAMMAR AND READING. Two hours, first semester, at 1:30. Grammatical exercises accompanying the reading and translating of works of Goldoni, Fogazzaro, Carducci, Pascoli. Prerequisite, course 2. Ward.

34.—WRITERS OF THE CINQUECENTO. Two hours, second semester, at 1:30. Prerequisite, course 3. Ward.

70.—DANTE. Three hours, first semester, by appointment. The *Divina Commedia*; its relation to the age, and its importance in the history of the Italian language and literature. Ward.

SOCIOLOGY.

Professor BLACKMAR.

Assistant Professor HELLEBERG.

EQUIPMENT.—Instruction in the department of sociology is conducted chiefly by lectures, reading, recitation, and investigation, aided in certain courses by textbooks. The University library is very well equipped for the study of sociology. All of the principal magazines treating of the work of this department are on file in the reading room for the use of students. In addition there are charts, maps and outlines. In the natural history museum is a valuable collection of specimens for the study in anthropology and ethnology. A limited amount of investigation of social and racial conditions is being carried on.

50.—ELEMENTS OF SOCIOLOGY. Three hours, each semester, at 8. A general course in the foundations and principles of sociology, including a study of the origin, evolution, structure, organization and activities of society. Attention is given to social aims, social achievements and social progress. The course is especially arranged for those who have not previously studied sociology. A concrete study of a community or group is required of each student. Blackmar.

51.—APPLIED SOCIOLOGY. Three hours, second semester, at 1:30. A continuation of course 50. Blackmar.

52.—SOCIAL PATHOLOGY. Two hours, first semester, at 1:30. A general study of poverty, pauperism, unemployment, epilepsy, insanity, degeneracy, etc., and their causes, prevention and cure. Conditions of the slums and rural populations, housing of the poor, social maladjustment, occupational diseases, etc. Helleberg.

53.—REMEDIAL AND CORRECTIVE AGENCIES. Two hours, second semester, Tuesday and Thursday, at 1:30. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; housing of the poor; defects of social organization; methods of prevention of social degeneration; social sanitation. Each student is required to visit at least two social institutions and report on same. Helleberg.

54.—SOCIALIZATION AND SOCIAL CONTROL. Three hours, first semester, at 2:30. This course is designed to give a thorough study in pure sociology. It has to do with social forces, social laws, and the origin and development of social control. It involves a study of aggregation, association and coöperation, as well as social inequalities and methods of overcoming their evil effects. Helleberg.

55.—PSYCHOLOGICAL SOCIOLOGY. Three hours, second semester, at 2:30. A study of the concept of the social self and the process of its development, together with applications to social problems, in order to establish a viewpoint for sociology; psychology of races, of classes, and of social and political institutions. Helleberg.

56.—THE FAMILY. Two hours, second semester, at 2:30. The origin and growth of the family historically considered. The family as the unit of society. The legal relation of husband and wife and of parents and children. The economic basis of family life. The psychology of family life. The family as a type of society. Its importance in the preservation of society. The pathology of the family. The relation of the family to the general social organism, politically, religiously and socially. Helleberg.

57.—SOCIALISM. Two hours, first semester, at 2:30. The development of modern socialistic theories, including a study of French and German socialism. Modern socialistic tendencies and their causes. The development of social democracy. The limita-

tions of industrial liberty. Government control and government ownership of industries. Helleberg.

58.—ANTHROPOLOGY. Two hours, first semester, at 8. The natural history of man. The probable origin and antiquity of man. Comparison with anthropoid apes. Man's physical, social and mental characteristics. Methods of obtaining food, shelter, and distribution over the earth. Evidences of Tertiary man. Relics of man found in the gravel drift, caves and mounds. The beginnings of art and industry. The division of labor. The origin and development of language. Blackmar.

59.—ETHNOLOGY. Two hours, second semester, at 8. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Blackmar.

60.—RURAL SOCIOLOGY. Three hours, second semester, at 1:30. A study of social conditions in rural districts and small towns. The agencies for social and economic betterment. The church and the schoolhouse as social centers. Political, social and economic organizations. Alternating with applied sociology. Blackmar.

61.—CONTEMPORARY SOCIETY IN THE UNITED STATES. Three hours, first semester, at 1:30. A general survey of natural environment, population and its distribution, industrial and social grouping, etc.; designed, through the study of current concrete social problems, as an introduction to sociology and as a means of correlating the various social sciences. Helleberg.

SPANISH.

(See Romance Languages and Literatures.)

ZOOLOGY.

Assistant Professor BAUMGARTNER.

Professor DYCHE.†

Assistant Professor MOODIE.

Assistant Professor ROBERTSON.

Miss NOWLIN, Instructor.

Miss PINNEY, Instructor.

EQUIPMENT.—The department is in the possession of ample facilities in the way of specimens and apparatus for the presentation of the courses outlined below. The historical development of vertebrate life is made teachable by the large paleontological collection in the museum. Representative types of invertebrates from the Atlantic and Pacific coasts, as well as from Bermuda, make possible the thorough treatment of almost any of the lower orders. Histological, cytological and embryological material of great variety has been provided. Microscopes, microtomes and other apparatus necessary for even the most advanced work are

† Absent on leave.

at hand. The well-equipped preparation rooms make instruction in the museum very thorough.

ADVICE CONCERNING CHOICE OF COURSES.—Course 1 is designed as an introduction to the subject, and, so far as possible, gives a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoölogy and to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work, and is required for entrance into the other courses, except 70. Taken with course 1 in botany, it completes a year's training in elementary biology.

Courses 2 and 3 logically follow course 1, and should be taken by those who desire a more comprehensive view of the subject than can be gained in a half-year's study. While more advanced in character than the first course, they are not too technical for the general student. They should be taken by all wishing to continue in the more advanced courses.

Students contemplating the study of medicine are recommended to take not less than ten hours of work in zoölogy. Arrangements have been made to provide such students with as much comparative anatomy as possible. Consultation should be had with the head of the department, early in the course, for the purpose of arranging the work.

1.—ELEMENTARY ZOOLOGY. Five hours, first semester, 8 to 10, 10:15 to 12:15, and 1:30 to 3:30. A course dealing with the general characteristics and relationships of the main groups of animals. It consists of a laboratory study of type specimens, supplemented by lectures upon classification, distribution, morphology, function, habits, evolution, etc. Moodie, Robertson, Nowlin, Pinney.

2a.—INVERTEBRATE MORPHOLOGY. Three hours, second semester, 10:15 to 12:15. A course treating the structure and relationships of the lower phyla, with special attention to parasitism and the production of disease by the Protozoa and lower Vermes. Designed to meet the needs of premedical students who desire a practical knowledge of Protozoa. Lectures and laboratory work. Prerequisite, course 1 or equivalent. Nowlin.

2b.—INVERTEBRATE EMBRYOLOGY. Two hours, second semester, 10:15 to 12:15. A study of maturation, segmentation and later developmental stages of the invertebrates, showing by comparison of larvæ the relationships and evolution of the principal phyla. Prerequisite, course 1 or equivalent. Recommended to follow or to accompany course 2a. Nowlin.

3.—COMPARATIVE ANATOMY. Five hours, second semester, 1:30 to 3:30. A course dealing with the structure and developmental relations of the vertebrates. It consists of a laboratory study and dissection of types, lectures and assigned readings, and designed for premedical students, those intending to teach, and those wanting a general culture course. Prerequisite, course 1. Baumgartner, Moodie.

50.—SYSTEMATIC ZOÖLOGY. Five hours, first semester, 3:30 to 5:30. Laboratory work in identifying Kansas invertebrates and related marine forms. Recitations, assigned readings, and lectures. Large collections of vertebrates from the Gulf of Mexico, Puget Sound and other places add a large amount of interest to the work. Special problems assigned to suit the needs of individual students. Work on food habits, geographical distribution and relationship. Prerequisites, courses 1 and 2 or 3. Moodie.

51.—FIELD WORK AND LIFE HISTORIES. Three or six hours, second semester, Monday and Friday, at 3:30, and Saturday morning. A systematic and ecological study of the local fauna with special reference to their habits, habitats and life history. Prerequisites, courses 1 and 2 or equivalent. Baumgartner.

53.—ANIMAL HISTOLOGY. Five hours, first semester, 3:30 to 5:30. The methods of preparation and a careful study of normal tissues are given in this course. Lectures, assigned readings, and laboratory work. Prerequisites, courses 1 and 3 or equivalents. Baumgartner.

54.—CYTOLOGY. Five or ten hours, throughout the year, by appointment. A study of the cell with special reference to problems of heredity and development. Prerequisites, courses 1 and 2 or 3. Robertson.

55.—EMBRYOLOGY. Five hours, second semester, 3:30 to 5:30. Lectures and laboratory work. The ontogeny of the shark, frog, chick, pig and human. Prerequisites, courses 1 and 2 or 3. Robertson.

56.—PALEOZOÖLOGY. Five or ten hours, throughout the year, by appointment. A course dealing with the anatomical characters which have marked the evolutionary stages in the geological history of vertebrates. Lectures, recitations, assigned readings and laboratory work. Abundant material is at hand for the full illustration of the course. Prerequisites, courses 1 and 3. Geology 1 is recommended as further preparatory work. Moodie.

70.—ORGANIC EVOLUTION. Three hours, first semester, at 9. This course will present the theory of evolution historically and in the light of recent important evidence derived from observation and experiment. Lectures, readings and recitations. Robertson, Stevens.

71.—PROTOZOÖLOGY. Three to ten hours, throughout the year, by appointment. A study of the structure, behavior and life history of the unicellular animals. Their relations to disease and to the important biological laws receive special attention. Work exclusively on pathogenic forms can be provided for medical students who have had course 2a. Prerequisite, courses 2a and botany 4. Nowlin.

72.—HEREDITY AND GENETICS. Three or five hours, second semester, 9 to 10. Lectures three hours and laboratory two hours. This course will present the problems of heredity and evolution in the light of recent work in experimental zoölogy, genetics, animal breeding and eugenics. Prerequisites, course 1. Courses 2 or 3 and botany 1 are recommended. Robertson.

73.--EXPERIMENTAL MORPHOLOGY. Three or five hours, second semester, by appointment. The historical progress of experimental work in its various phases, as regeneration, animal behavior and growth, will be presented in lectures. Laboratory work will give practice in methods of experimental research. Prerequisites, courses 1 and 2 or 3. Pinney.

SCHOOL OF ENGINEERING.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM H. CARRUTH, PH. D., Vice President of the Faculties, and Professor of Germanic Languages.

FRANK O. MARVIN, A. M., Dean, and Professor of Civil Engineering.

EDGAR H. S. BAILEY, PH. D., Professor of Chemistry and Metallurgy.

CHARLES G. DUNLAP, LITT. D., Professor of English Literature.

ERASMUS HAWORTH, PH. D., Professor of Geology, Mineralogy, and Mining.

WM. C. STEVENS, M. S., Professor of Botany.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

JAMES NAISMITH, M. D., Professor of Physical Education, and Chapel Director.

PERLEY F. WALKER, M. M. E., Professor of Mechanical Engineering, and Director of Fowler Shops.

GEORGE C. SHAAD, E. E., Professor of Electrical Engineering.

FREDERICK E. KESTER, PH. D., Professor of Physics.

HAMILTON P. CADY, PH. D., Professor of Chemistry.

B. J. DALTON, B. C. E., Professor of Railway Engineering.

HARRY A. MILLIS, PH. D., Professor of Economics.

ROBERT BURNS H. BEGG, C. E., Professor of Sanitary and Hydraulic Engineering.

GRANVILLE R. JONES,* C. E., Professor of Sanitary Engineering.

MARTIN E. RICE, M. S., Secretary, and Associate Professor of Physics.

HERBERT A. RICE, C. E., Associate Professor of Civil Engineering.

CLINTON M. YOUNG, E. M., Associate Professor of Mining Engineering.

FREDERICK H. BILLINGS, PH. D., Associate Professor of Botany and Bacteriology.

HENRY W. HUMBLE, A. M., Associate Professor of Law.

* Assigned to state work under the State Board of Health.

CHARLES H. ASHTON, PH. D., Associate Professor of Mathematics.
GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.

FRANK B. DAINS, PH. D., Associate Professor of Chemistry.

WM. A. WHITAKER, JR., A. M., Associate Professor of Chemistry and Metallurgy.

FRANK E. WARD, Superintendent of Fowler Shops.

FREDERICK N. RAYMOND, A. M., Assistant Professor of English.

CHARLES COCHRAN, B. S. in M. E., Assistant Professor of Mechanical Drawing.

FRANK E. JONES, Assistant Professor of Pattern Making.

ALFRED H. SLUSS, B. S. in M. E., Assistant Professor of Mechanical Engineering.

HARRY GARDNER, M. S., Assistant Professor of Sanitary Engineering.

HERMAN C. ALLEN, A. M., Assistant Professor of Chemistry.

CLARENCE A. JOHNSON, B. S., Assistant Professor of Electrical Engineering.

CLIFFORD C. YOUNG, M. S., Assistant Professor of Chemistry.

HERBERT E. JORDAN, PH. D., Assistant Professor of Mathematics.

DAVID W. STRADLING,[†] C. E., Assistant Professor of Railway Engineering.

EDMUND PENDLETON RANDOLPH DUVAL, A. M., Assistant Professor of Mathematics.

F. H. SIBLEY, M. E., Assistant Professor of Mechanical Engineering.

MAY GARDNER, A. B., Instructor in Romance Languages.

ALLEN ANDERS SEIPT, PH. D., Instructor in German.

JOHN J. WHEELER, A. B., Instructor in Mathematics.

OSCAR W. MELIN, B. S. in C. E., Instructor in Civil Engineering.

HERBERT H. WILTFONG, Instructor in Forging.

JASPAR O. HASSLER, A. B., Instructor in Mathematics.

CHAS. A. HASKINS,* B. S., Instructor in Civil Engineering.

JACOB O. JONES, Instructor in Civil Engineering.

WORTH HUFF RODEBUSH, A. B., Instructor in Chemistry.

LEON B. MCCARTY, A. M., Instructor in Rhetoric.

JOHN D. GARVER, B. S., Instructor in Mechanical Engineering.

EPHRAIM E. LANDRUM, Assistant in Woodworking.

CARL F. HANSON, B. S., Assistant in Electrical Engineering.

ANSELL STUBBS, —, Assistant in German.

* Assigned to state work under the State Board of Health.

† Appointed as a substitute for the school year 1912-1913.

PURPOSE OF THE SCHOOL.

The School of Engineering is the scientific or technical school of the University. It offers what is, in the main, technical training in the various departments of engineering—civil, electrical, mechanical, mining, sanitary, chemical and architectural. The courses of study in these branches of engineering are designed first of all to furnish a broad and thorough training in mathematics, mechanics, drawing, and physical science, the fundamental subjects on which the more professional subjects are based. They are alike during the first year, and are nearly identical up to the end of the Sophomore year, but differ considerably thereafter, each emphasizing the subjects peculiar to itself and giving as much technical training as is consistent with the thorough inculcation of sound theory.

FOUR-YEAR AND FIVE-YEAR COURSES.

Two sets of courses of study are offered in the School of Engineering: (1) Regular four-year courses of study based upon the completion of fifteen units of high-school entrance work, as stated under "Subjects for Admission" below; (2) advanced four-year courses of study based upon the completion of one year of work in the College, making five years in all. The detailed programs of the advanced four-year courses of study are given following those of the regular four-year courses of study.

Any student in the School of Engineering may supplement his work in this school by work elsewhere in the University, subject, of course, to the particular requirements of the courses he wishes to enter.

ADMISSION TO THE SCHOOL.

There are two methods of admission to the School of Engineering of the University: first, by examination; second, by certificate.

1. BY EXAMINATION.

Times and places of examination for admission to the School of Engineering are the same as for admission to the College. For schedules see The College, under the heading "Admission," page 110, or write the Registrar of the University. Candidates may divide the examination between two years, as noted.

2. BY CERTIFICATE.

Nearly all students enter the School of Engineering by certificates from high schools, academies, and preparatory schools of other colleges and universities, and from military schools, accredited by the University. The candidate for admission by certificate must present either a certificate or other credential, as noted in connection with admission to the College. In gen-

eral, the same rules apply in regard to admission by certificate to the School of Engineering as apply for admission to the College.

SUBJECTS FOR ADMISSION.

Fifteen units must be offered for entrance. Of these, nine must be those in the list of required subjects, the other six being selected from the optional list. Selection from this optional list is unrestricted, excepting that one unit only may be offered from the group of six subjects listed last in the column.

REQUIRED.	OPTIONAL.
Mathematics 1, 2, 3, algebra and plane and solid geometry, 3 units. English 1, 2, 3 3 " Physics 1 " Foreign language— Two units in one of the following: French, German, Latin or Spanish, 2 " <hr/> Required 9 "	Latin 1, 2, 3 - units. German 1, 2, 3 - " French 1, 2, 3 - " Greek 1, 2, 3 - " Spanish 1, 2 - " Greek and Rom. hist., 1 " Mediæval and modern history 1 " English history 1 " American history 1 " Chemistry 1 " Higher algebra $\frac{1}{2}$ " Plane trigonometry .. $\frac{1}{2}$ " Physical geog. ... $\frac{1}{2}$ or 1 " Botany 1 " Physiology 1 " Zoölogy 1 " Biology 1 " Economics $\frac{1}{2}$ or 1 " Civics $\frac{1}{2}$ " Advanced arithmetic, if taken after first year of algebra ... $\frac{1}{2}$ " Free-hand or mechan- ical drawing 1 " Manual training 2 " One unit only may be offered from the following group: Stenography $\frac{1}{2}$ " Bookkeeping $\frac{1}{2}$ " Commercial law ... $\frac{1}{2}$ " Commercial geog. ... $\frac{1}{2}$ " Agriculture ... $\frac{1}{2}$ or 1 " Psychology $\frac{1}{2}$ "

DEFICIENCIES AND UNIT OF ENTRANCE.

The candidate may be admitted to the Freshman class although deficient in some of the requirements as laid down above, provided such deficiency does not exceed two units. All deficiencies must be made good within such time as may be fixed in

each individual case by the Dean of the School of Engineering.

Applicants for admission are advised to come without deficiencies, and to be especially well prepared in algebra and geometry.

An entrance unit represents five periods a week, of not less than forty minutes each, for thirty-five weeks.

ACCREDITED SCHOOLS.

The list of schools accredited to the School of Engineering is practically the same as that of schools accredited to the College.

FOREIGN LANGUAGES.

ENTRANCE WITHOUT FOREIGN LANGUAGE.

High-school graduates presenting fifteen units from the list of accredited entrance subjects, but with no foreign language, will be admitted to the School of Engineering without entrance conditions, but will be required to take two full years of German, French or Spanish in the University, instead of the one year of foreign language regularly required.

ADVANCED CREDIT IN FOREIGN LANGUAGE.

Advanced credit for work in preparatory schools will be given upon examination only, excepting for the following provisions in foreign language: Graduates of high schools presenting four units in not more than two foreign languages, one of these being in a modern language, will be allowed to substitute five hours of optional subjects in the University for five hours of the regularly required modern language in the engineering courses of study. When presenting five or more units in not more than two foreign languages, two of these units being in a modern language, they will be allowed to substitute ten hours of optional courses for the ten hours of modern language regularly required. The choice of these optional courses shall be subject to the approval of the student's adviser and the Dean of the School of Engineering. For times and places of examination for advanced credit, see The College, p. 110.

ADMISSION TO ADVANCED STANDING.

For an advanced rank, the applicant must have completed all of the courses of the curriculum below the rank for which he applies, including the entrance requirements, or their substantial equivalent, as determined by the committee on advanced standing. Application for credits toward advanced standing should be made to the Dean of the School of Engineering.

SPECIAL STUDENTS.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special lines of work, without following any prescribed course of study or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose cer-

tificate of acceptance must be presented to the Registrar before registration. Applicants for admission as special students must present satisfactory evidence of proper preparation for the courses desired, and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as are regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of courses to be pursued.

REGISTRATION AND ENROLLMENT.

All candidates for admission to the School of Engineering having high-school certificates, and all students intending to pursue their studies in the ensuing year, should present themselves for registration at the University on September 17 to 20, inclusive, 1913. Preliminary registration may be made through the mails by forwarding to the Registrar a certified transcript of preparatory work, this registration to be completed by the Registrar during the opening week of the following semester.

The Dean of the School of Engineering is charged with the execution of all University and Faculty rules relating to the enrollment of students in classes and their choice of courses.

Upon registration, each student will receive from the Registrar a certificate of his standing, which he will present to the Dean of the School, who is charged with the duty of enrollment of students in classes, selection and arrangement of courses, and assignment of hours.

INADEQUATE PREPARATION.

When a student shows by his current work insufficient preparation for any course, he may be required to make good such deficiency in any manner prescribed by his instructor and approved by the Dean of the School.

DEGREES GRANTED.

All courses of study in the School of Engineering lead to the degree of bachelor of science. All work for higher degrees is under supervision of the Faculty of the Graduate School. The degree of master of science may be granted to graduates of the School of Engineering after completion of one year's work in residence.

Graduates in engineering from this University, and masters of science who have received their degrees through the Graduate Faculty, are eligible to the professional degrees of civil engineer, electrical engineer, mechanical engineer, mining engineer, and chemical engineer, whichever is appropriate to the undergraduate course taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, or in positions of responsibility, in the design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

The candidate must submit an engineering thesis, accompanied

by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of his own work or observation. If approved, the thesis and all accompanying material becomes the property of the University.

The thesis for any professional degree must be delivered to the Dean of the School of Engineering on or before May 15.

THE COURSE AND THE CREDIT HOUR.

As generally used throughout the Catalogue, the word "course" refers to a particular study or subject, as the work of a class during a semester, to complete which some specified amount of work is necessary. The ground covered in each course is indicated in that portion of the Catalogue devoted to Description of Courses. Any one subject, like German or calculus, may be divided into several courses, no student being allowed to enroll in more than one course in that subject at one time. Such courses are arranged so as to be taken in succession. When the word "course" is used in any sense different from this it is coupled with other words, such as "course of study," meaning a complete program for a full semester or for the full period of years usually required to secure a degree.

The amount of work required to complete a course is measured in "credit hours." One credit hour in the School of Engineering represents an amount of work which is estimated to require three hours per week, throughout a semester, of the time of a student of average ability. These three hours may be divided in any ratio between class attendance and outside work, most courses being in the ratio of one hour in class to two hours of outside preparation; of two hours in class to one hour of outside preparation or report writing; or all three required in class with no outside preparation. In the descriptions of courses the number of credit hours for each is stated.

GRADES AND FAILURES.

The satisfactory completion by the student of each course is determined by the instructor in charge, and the quality of the work is indicated by the numeral 1, 2, or 3, thus establishing the grade attained. Grade 1 indicates that the work of the student has been excellent in quality; grade 2 indicates that the work of the student has been reasonably good; grade 3 indicates that the student's attainments are sufficient to enable him to pursue the succeeding courses in the same or other departments.

Any grade or rank below grade 3 is recorded as a failure, indicated by the letter F. Such courses must be repeated in regular classes, unless arrangements are made with the Dean of the School for private tutoring under some special instructor approved by the head of the department concerned. Each failure must be made good as soon as the course is again given regularly in the School.

In case the work of the student in any course is of satisfactory grade but incomplete in some respects, the instructor

may grade him as "conditioned," indicated by the letter C. Such "condition" may be removed by special examination, or by satisfactory completion of assigned work. When the instructor reports the student as qualified, the record is turned in by the instructor on a special card issued by the Dean of the School. In case the condition is not removed by the time the course is given again in regular schedule, it becomes a failure and the course must be repeated.

When a student is absent from the final examination, or has done none of the regular work of a course, the instructor grades him as "not examined," indicated by the letters NX. In all respects relative to making up the work, the grade of NX is the same as F.

Weekly reports on the work of each student are made by his instructors, and are on file in the office of the Dean. At the end of each semester all final grades are recorded in the books of the Registrar of the University; and at that time the parent or guardian of each student will be furnished, on request, a copy of the entries relating to that student.

Absence from examination or failure in more than one-third of his work in any one semester severs a student's connection with the University, and that connection can be renewed only through the Dean of the School.

Any withdrawal from school or from any course must be authorized by the Dean; otherwise the student's absence will be construed as failure.

EXAMINATIONS.

Regular examinations in the work of scheduled courses are held at times determined by the University Council. In determining the final grade of a student in any course the instructor may establish an average between the grades in final examination, in daily class work, and in mid-semester "quizzes," on such basis as he may see fit.

FEES.

Matriculation fee, for residents of the state.....	\$5.00
for nonresidents	10.00
Incidental fee per school year, for residents of the state,	10.00
for nonresidents	20.00
Diploma fee, at graduation.....	5.00

COST OF MATERIALS.

In all laboratory and shop courses the student is charged for the materials and supplies he consumes in his work. These charges are payable in advance at the office of the University Secretary by the purchase of a book of coupons receivable for materials in any course, or by the payment of a fixed amount for a course in which the material can not be issued to each student individually. A schedule of these fixed fees, varying from 50 cents to \$4, is posted in Marvin Hall and in the office of the University Secretary. In those courses where a large

amount of material is used by the student and paid for with coupons, the total cost for any one course may reach or occasionally exceed \$10.

Those students taking summer field work will be charged the actual cost of living and incidental expenses.

EXPENSE FOR INSPECTION TRIPS, ETC.

Students should make provision for expenses of about \$40 in the Junior or Senior year, or both, for inspection trips to engineering works. See "Inspection Trips" at the end of "Description of Courses," page 261.

PROGRAM OF STUDIES.

The courses of study in the School of Engineering are almost entirely prescribed. The work is in the main technical, and requires preparation of a high order, especially in mathematics. It also requires continuous effort in the courses themselves, which call for the entire time of the student to succeed satisfactorily. Students are required to enroll in the courses in the order in which they are scheduled, any course scheduled in an earlier year having precedence over those in a later year.

The work of the Freshman year is common to all students of the School of Engineering, so that a choice between the several lines of engineering need not be made until after a year's experience with college life. As a further aid in making an intelligent choice, the general aims of the several courses are here briefly stated.

CIVIL ENGINEERING.

The first aim is to impart as broad a scientific training as the length of the course of study and the essential professional studies will allow, so that as many avenues to successful service as possible may be open to the graduate. Along professional lines, emphasis is laid first on work in surveying and field methods, as these are of special value to young engineers; second, on mechanics and its applications to the design of roofs and bridges and other structures; third, on railway location and construction; fourth, on hydraulics and its applications to irrigation and canal work; fifth, on water supply, sewerage, and roads and pavements. Stress is placed on the study of principles, as being the knowledge not likely to be acquired in after-life.

MUNICIPAL AND SANITARY ENGINEERING.

This course of study is a modification of that in civil engineering, and is intended for those desiring a more extensive study and a more thorough training in general sanitary science and in municipal and sanitary engineering practice. The program of study is practically the same as in civil engineering, except that during the Junior and Senior years the railroad work and the work in bridge designing are replaced by studies more closely related to public sanitation and municipal engineering practice.

This new added work includes a somewhat specialized course in bacteriology, particularly in its relation to water supply and sewerage; a short lecture and laboratory course in the chemical analysis of water; a broad and general study of sanitary science as related to public health problems; courses in the design of engineering structures related to sewage disposal and water purification; and a study of the theory and practice of reinforced concrete construction. The course of study also aims, by

means of work in the sanitary laboratory and engineering experiment station, by visits of inspection to engineering works of interest to sanitary engineers, and by means of papers and informal discussions in the journal meetings, to train the student's judgment in regard to sanitary problems, and to strengthen his grasp upon the regular classroom studies.

ELECTRICAL ENGINEERING.

The course of study in electrical engineering is designed to train the student in those fundamental principles of mathematics, physics, chemistry, mechanics, and electricity which form the basis of all successful engineering work. The laboratory and shop work is arranged to develop and to encourage individual skill and ingenuity. Such experience in practical electrical work as is possible is also included. The aim of the entire course of study is to develop in the student those qualities that are essential to the professional engineer as well as those that are essential to the electrical artisan. The thesis involves original investigation.

MECHANICAL ENGINEERING.

In this course of study the aim is to give the student the broadest possible training in the fundamental sciences, with especial emphasis on machine construction and design, properties of structural materials, fundamentals of power generation with engine design, and manufacturing methods, for the purpose of preparing him for any one of the many lines of work coming under the designation of mechanical engineering. Freedom of options in the Senior year permits specialization in any one of the following lines: steam engineering and power-plant work; gas engineering; industrial or mill engineering, for general manufacturing; refrigeration engineering; or hydraulic power development. Particular attention is given to the science of management of manufacturing plants.

MINING ENGINEERING.

The object of the course of study in mining engineering is to qualify students for work in prospecting, mining, milling, and smelting, in accordance with modern scientific principles. The course of study includes a sufficient requirement in language work to give the student a good knowledge of English and foreign language, and a sufficient number of scientific and technical subjects—mathematics, engineering, chemistry, metallurgy, mining, mineralogy, and geology—so that upon the completion of the course of study he may be well qualified for specializing along any line which his future life may make desirable.

CHEMICAL ENGINEERING.

This course of study affords students an opportunity to specialize in chemistry, and to fit themselves for positions as chemists, managers, or superintendents of manufacturing plants where the work is based on chemical science. These would in-

clude such industries as those of iron, zinc, gold, and silver smelting and refining, the making of fertilizers, clay working, sugar refining, dyeing, bleaching, gas making, cement making, or general chemical manufacture. This course of study is broad enough for general training, and may be made special enough for technical work.

ARCHITECTURAL ENGINEERING.

This course of study is designed to train men to deal with the structural side of building design and construction. It is arranged to follow in a general way the plan of work required in the Civil Engineering course of study and, in common with all of the work given in the School of Engineering, aims to develop the general scientific training which forms the basis of successful engineering practice.

WORK REQUIRED FOR GRADUATION.

The different courses of study outlined below are each designed to include 138 credit hours of work during the regular school years, and two periods of summer work as indicated. In those courses of study requiring only one period of summer work, the total is 139 credit hours; and in those requiring no summer work, the total is 140 credit hours.

DEGREE GRANTED.

The degree of Bachelor of Science in Civil (Electrical, Mechanical or other named course of study) Engineering is granted upon the completion of one of the following courses of study and the diploma given states the particular course of study pursued by the student.

COURSES OF STUDY.

(The schedule of hours of classes is posted each semester on the bulletin boards of the various buildings. The hours at which classes meet are stated in the Description of Courses as nearly as they can be determined before the schedules are made up.)

WORK IN COMMON.

FRESHMAN YEAR.

All students of the School of Engineering pursuing the regular four-year courses of study (except the students of Architectural Engineering—see p. 220) have work in common during the Freshman year. The differentiation between courses of study begins in the Sophomore year. For definitions of hours and credits see "The Course and the Credit Hour," page 206.

The foreign language chosen must be carried throughout the year, five hours each semester. The selection of the language courses will depend on the amount and kind of language offered for entrance.

First Semester, 17 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 2	College Algebra	3
Mathematics 3	Plane Trigonometry	2
German, French, or Spanish	Course as approved	5
English 1 E	Rhetoric I	3
Mech. Drawing 1.....	Free-hand Drawing	1½
Mech. Drawing 2.....	Mechanical Drawing	3
Mech. Drawing 4, or Shop Work 1, and Shop Work 2.....	{ Machine Drawing Forging and Bench Work... Woodworking and Molding.. }	2
	Engineering Lectures.*	
	Gymnasium, 3 hours per week.†	

Second Semester, 17 credit hours.

Mathematics 4 E	Analytic Geometry and Theory of Equations	5
German, French, or Spanish	Course as approved	5
English 2 E	Rhetoric II	2
Mech. Drawing 3	Descriptive Geometry	3
Mech. Drawing 4, or Shop Work 1, and Shop Work 2	{ Machine Drawing Forging and Bench Work... Woodworking and Molding.. }	2
	Gymnasium, 3 hours per week.†	

* See "Engineering Lectures," page 260.

† See "Physical Education," page 257.

CIVIL ENGINEERING.

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 5 E	Calculus I	5
Physics 1 E	General Physics	5
Civil Engineering 2	Surveying	2
Geology 1	Elementary Geology	5
	Technical Report I†	½

Second Semester, 16½ credit hours.

Mathematics 6 E	Calculus II	3
Physics 2 E	General Physics	5
Civil Engineering 2	Surveying	3
Mech. Engineering 5 ...	Engines and Boilers	3
Civil Engineering 1	Topographical Drawing	2
	Technical Report II†	½

Summer Work.

Civil Engineering 3 Field Work, 4 weeks.

JUNIOR YEAR.

First Semester, 18 credit hours.

Mechanics 50	Mechanics	5
Civil Engineering 58 ...	Railway Surveying	5
Civil Engineering 50 ...	Railway Drawing	1
Chemistry 2	Advanced Inorganic Chemistry..	4
English 50 E	Advanced Composition	3

Second Semester, 16½ credit hours.

Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
Civil Engineering 57 ...	Railway Location	3
Chemistry 5 E	Engineering Chemistry	3
Civil Engineering 56 ...	Roads and Pavements	2
Civil Engineering 51 ...	Graphical Statics	3
	Technical Report III†	½

Summer Work.

Civil Engineering 53 ... Field Work, 4 weeks.

SENIOR YEAR.

First Semester, 17½ credit hours.

Civil Engineering 68 ...	Hydraulics	3
Civil Engineering 60 ...	Hydraulic Laboratory	1
Civil Engineering 61 ...	Roofs and Bridges	5
Civil Engineering 55 ...	Masonry	3
Civil Engineering 59 } or Elec. Engineering 60 }	{ Sewerage and Water Supply } { El. of Elec. Engineering.... }	4
	Thesis†	1
	Technical Report IV†	½

Second Semester, 18 credit hours.

Civil Engineering 52 ...	Contracts and Specifications	3
Civil Engineering 54 ...	Cement Laboratory	1
Civil Engineering 62 ...	Bridge Design	5
Civil Engineering 65 ...	Reinforced Concrete	3
	Optional	4
	Thesis‡	2

MUNICIPAL AND SANITARY ENGINEERING.

SOPHOMORE YEAR.

The same as in Civil Engineering.

JUNIOR YEAR.

First Semester, 18 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mechanics 50	Mechanics	5
Civil Engineering 59 ...	Sewerage and Water Supply....	4
Chemistry 2	Advanced Inorganic Chemistry..	4
Civil Engineering 67 ...	Municipal Drawing	2
English 50 E	Advanced Composition	3

Second Semester, 17½ credit hours.

Civil Engineering 69 ...	Sanitary Science	3
Civil Engineering 56 ...	Roads and Pavements	2
Civil Engineering 70 ...	Sanitary Laboratory	1
Civil Engineering 54 ...	Cement Laboratory	1
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
Chemistry 3	Qualitative Analysis	4
	Sanitary Journal	1
	Technical Report III‡	½

SENIOR YEAR.

First Semester, 17½ credit hours.

Civil Engineering 68 ...	Hydraulics	3
Civil Engineering 60 ...	Hydraulic Laboratory	1
Civil Engineering 61 ...	Roofs and Bridges	5
Civil Engineering 55 ...	Masonry	3
Chemistry 56 E	Water Analysis	5
	Technical Report IV‡	½

Second Semester, 18 credit hours.

Civil Engineering 52 ...	Contracts and Specifications	3
Civil Engineering 64 ...	Sanitary Design	5
Civil Engineering 65 ...	Reinforced Concrete	3
	Sanitary Journal	1
	Optional	3
	Thesis‡	3

‡ See "Technical Reports and Theses," page 260.

ELECTRICAL ENGINEERING.

SOPHOMORE YEAR.

First Semester, 16½ credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 5 E	Calculus I	5
Physics 1 E	General Physics	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Mech. Engineering 1....	Machine Drafting	1
Shop Work 3.....	Pattern Making	1
	Technical Report I†.....	½

Second Semester, 17½ credit hours.

Mathematics 6 E	Calculus II	3
Physics 2 E	General Physics	5
Chemistry 3	Qualitative Analysis	4
Mech. Engineering 3....	Elementary Machine Design....	3
Mech. Engineering 4....	Steam Machinery	2
	Technical Report II†.....	½

Summer Work.

Shop Work, 4 weeks, 44 hours per week.

JUNIOR YEAR.

First Semester, 17½ credit hours.

Mechanics 50	Mechanics	5
Elec. Engineering 50...	Dynamo Machinery	3
Elec. Engineering 54...	Electrical Laboratory	1½
Physics 52	Theory of Electricity.....	3
Physics 60 E	Electrical Measurements I.....	1½
Mech. Engineering 52...	Heat Engine Theory.....	3
	Technical Report III†.....	½

Second Semester, 18 credit hours.

Elec. Engineering 51...	Theory of Alternating Currents..	5
Elec. Engineering 55...	Electrical Laboratory	1½
Mech. Engineering 53...	Mechanics of the Steam Engine..	2
Mechanics 51	Strength of Materials.....	4
Mechanics 52	Testing Laboratory	1
English 50 E	Advanced Composition	3
Physics 61	Electrical Measurements II.....	1½

SENIOR YEAR.

First Semester, 18 credit hours.

Elec. Engineering 52...	Advanced Dynamo Machinery...	5
Elec. Engineering 56...	Advanced Electrical Laboratory,	1½
Civil Engineering 71...	Surveying	3
Mech. Engineering 65...	Heat Engine Laboratory.....	2
Chemistry 64	Physical Chemistry I.....	5
	Thesis†	1
	Technical Report IV†.....	½

Second Semester, 17 credit hours.

Elec. Engineering 58...	Electric Power Transmission....	5
Elec. Engineering 57...	Electric Lighting	3
Civil Engineering 52...	Contracts and Specifications....	3
	Optional	3
	Thesis†	3

One extended inspection trip is required during the Junior or the Senior year. (See page 261.)

MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 5 E	Calculus I	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Economics I, or	{ Elements of Economics, or... Advanced Language course as approved	3
Ger., French, or Span.. }		
Mech. Engineering 1....	Machine Drafting	1
Mech. Engineering 2....	Mechanism	3
Shop Work 3.....	Pattern Making	1
	Technical Report I†.....	½

Second Semester, 17½ credit hours.

Mathematics 6 E	Calculus II	3
Physics 1 E	General Physics	5
Mech. Engineering 6....	Steam Engineering	4
Chemistry 5 E	Engineering Chemistry	3
Shop Work 4.....	Bench work	2
Shop Work 5.....	Lathe Work	
	Technical Report II†.....	½

Summer Work.

Shop Work, 4 weeks, 44 hours per week.

JUNIOR YEAR.

First Semester, 18 credit hours.

Mech. Engineering 51...	Thermodynamics	4
Mech. Engineering 64...	Mechanical Laboratory	1
Physics 2 E.....	General Physics	5
Mechanics 50	Mechanics	5
Metallurgy 61 E	Metallurgy I	3

Second Semester, 16½ credit hours.

Mech. Engineering 50...	Machine Design	4
Mech. Engineering 54...	Heating and Ventilation.....	2
Mech. Engineering 69...	Shop Administration	2
Mechanics 51	Strength of Materials.....	4
Mechanics 52	Testing Laboratory	1
English 50 E	Advanced Composition	3
	Technical Report	½

Summer Work.

Commercial work or four weeks of Shop Practice.

SENIOR YEAR.

First Semester, 18 credit hours.

Mech. Engineering 56...	Steam Engine Design.....	2
Mech. Engineering 67...	Thesis	1
Civil Engineering 68...	Hydraulics	3
Civil Engineering 60...	Hydraulic Laboratory	1
Civil Engineering 71...	Surveying	3
Elec. Engineering 50...	Dynamo Machinery	3
Elec. Engineering 54...	Electrical Laboratory	1½
	Technical Report‡	½

OPTIONAL.

Mech. Engineering 61...	Structural Design	} 3
Mech. Engineering 58...	Gas Engine Design I.....	
Mech. Engineering 60...	Hydraulic Design	
Mech. Engineering 55...	Refrigeration	

Second Semester, 16½ credit hours.

Mech. Engineering 65...	Heat Engine Laboratory.....	2
Mech. Engineering 69...	Works Management	2
Mech. Engineering 67...	Thesis	2
Civil Engineering 52...	Contracts and Specifications....	3
Elec. Engineering 53...	Alternating Currents	3
Elec. Engineering 55...	Electrical Laboratory	1½

OPTIONAL.

Mech. Engineering 57...	Steam Turbine Design.....	} 3
Mech. Engineering 59...	Gas Engine Design II.....	
Mech. Engineering 62...	Industrial Plant Design	
	Other approved engineering subject	

One extended inspection trip is required during the Junior or the Senior year. (See page 261.)

MINING ENGINEERING.

SOPHOMORE YEAR.

First Semester, 18½ credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 5 E	Calculus I	5
Geology I	Elementary Geology	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Civil Engineering 2....	Surveying	2
Mech. Engineering 1....	Machine Drafting	1
Shop Work 4 (modified)	Bench and Lathe Work.....	1
	Technical Report I‡.....	½
	Mining Journal	

Second Semester, 18½ credit hours.

Physics 1 E	General Physics	5
Chemistry 3	Qualitative Analysis	4
Civil Engineering 2....	Surveying	3
Mineralogy 1 E	Elementary Mineralogy I.....	5
Mining Engineering 60..	Mining Drawing	1
	Technical Report II†.....	½
	Mining Journal.....	

Summer Work.

Civil engineering 3..... Field work, 4 weeks.

JUNIOR YEAR.

First Semester, 18½ credit hours.

Mining Engineering 50..	Mining	5
Mechanics 50	Mechanics	5
Geology 52	Economic Geology I.....	3
Chemistry 54	Quantitative Analysis I.....	5
	Technical Report III†.....	½
	Mining Journal	

Second Semester, 17½ (or 18½) credit hours.

Physics 2 E	General Physics	5
Mechanics 51	Strength of Materials.....	4
Mechanics 52	Testing Laboratory	1
Metallurgy 57	Assaying	5
Geology 53	Economic Geology II.....	2
Mining Engineering 57..	Mining Law	(-)1
	Technical Report IV†.....	½
	Mining Journal.....	

Summer Work.

Mining Engineering 59.. Field Work.

SENIOR YEAR.

First Semester, 17 credit hours.

Mining Engineering 51..	Ore Dressing	3
Mining Engineering 52..	Power, Extraction, etc.....	5
English 50 E	Advanced Composition	3
Mining Engineering 58..	Thesis	1
	Optional	5
	Mining Journal	

Second Semester, 15½ (or 16½) credit hours.

Mining Engineering 51..	Ore Dressing	3
Mining Engineering 53..	Sampling and Exploitation (a) ..	2½
Mining Engineering 57..	Mining Law	(-)1
Civil Engineering 52....	Contracts and Specifications....	3
Mining Engineering 58..	Thesis	2
	Mining Journal	
Metallurgy 62 E	Metallurgy II	5

CHEMICAL ENGINEERING.

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 5 E.....	Calculus I	5
Chemistry 2	Advanced Inorganic Chemistry ..	5
Physics 1 E	General Physics	5
Mech. Engineering 1 ...	Machine Drafting	1
Shop Work 3	Pattern Making	1
	Technical Report I†	½

Second Semester, 17½ credit hours.

Chemistry 3	Qualitative Analysis	5
Physics 2 E	General Physics	5
Mineralogy 1 E	Elementary Mineralogy I	5
Shop Work 4	Bench Work }	2
Shop Work 5	Lathe Work }	
	Technical Report II†	½

JUNIOR YEAR.

First Semester, 18½ credit hours.

Chemistry 4	Organic Chemistry I	5
Chemistry 54	Quantitative Analysis I	5
Mechanics 50	General Mechanics	5
English 50 E	Advanced Composition	3
	Technical Report III†	½

Second Semester, 19½ credit hours.

Chemistry 51 A	Industrial Chemistry: Inorganic,	3
Chemistry 55	Quantitative Analysis II	5
Chemistry 60	Organic Chemistry II	5
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	2
	Technical Report IV†	½

SENIOR YEAR.

First Semester, 17 credit hours

Chemistry 51 B	Industrial Chemistry: Organic..	2
Chemistry 64	Physical Chemistry	5
Metallurgy 61 E	Metallurgy I	3
	Optional from Chemistry Department, 7 hours, or	
	Optional 5 hours and Thesis 2 hours	7

Second Semester, 17 credit hours.

Chemistry 65	Physical Chemistry	5
Metallurgy 57	Assaying	3
Metallurgy 62	Metallurgy II	3
Civil Engineering 52 ...	Contracts and Specifications ...	3
	Thesis†	3

ARCHITECTURAL ENGINEERING.

FRESHMAN YEAR.

First Semester, 17 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 2	College Algebra	3
Mathematics 3	Plane Trigonometry	2
German, French, or Spanish	Course as approved.....	5
English 1 E	Rhetoric I	3
Arch. Engineering I	Free-hand Drawing	2
Mech. Drawing 2 . (Modified)	Mechanical Drawing	2
	Engineering Lectures. Gymnasium, 3 hours per week.	

Second Semester, 17 credit hours.

Mathematics 4 E	Analytic Geometry and Theory of Equations	5
German, French or Spanish	Course as approved.....	5
English 2 E	Rhetoric II	2
Mech. Drawing 3	Descriptive Geometry	3
Arch. Engineering 2	Architectural Drawing	2
	Gymnasium, 3 hours per week.	

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Arch. Engineering 3	Architectural Design I	3
Arch. Engineering 5	History of Architecture I	2
Mathematics 5 E	Calculus I	5
Physics 1 E	General Physics	5
Civil Engineering 2	Surveying	2
	Technical Report I†	½

Second Semester, 16½ credit hours.

Arch. Engineering 4	Architectural Design II	3
Arch. Engineering 6	History of Architecture II	2
Physics 2 E	General Physics	5
Mathematics 6 E	Calculus II	3
Mech. Engineering 5	Engines and Boilers	3
	Technical Report II†	½

JUNIOR YEAR.

First Semester, 18 credit hours.

Arch. Engineering 7	Architectural Design III	3
Mechanics 50	Mechanics	5
Chemistry 2	Advanced Inorganic Chemistry ..	4
English 50 E	Advanced Composition	3
Elect. Engineering 64 ...	Elec. Engineering for Architects,	3

Second Semester, 16½ credit hours.

Arch. Engineering 8	Architectural Design IV	3
Arch. Engineering 10 ...	Sanitary Construction	2
Economics 1	Elements of Economics	3
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
Civil Engineering 51 ...	Graphical Statics	3
	Technical Report III†	$\frac{1}{2}$

SENIOR YEAR.

First Semester, 17½ credit hours.

Arch. Engineering 11 ...	Architectural Engineering I	4
Civil Engineering 68 ...	Hydraulics	3
Civil Engineering 60 ...	Hydraulic Laboratory	1
Civil Engineering 61 ...	Roofs and Bridges	5
Civil Engineering 55 ...	Masonry	3
	Thesis	1
	Technical Report IV†	$\frac{1}{2}$

Second Semester, 18 credit hours.

Arch. Engineering 9	Steel Construction	3
Arch. Engineering 12 ...	Architectural Engineering II ...	4
Civil Engineering 52 ...	Contracts and Specifications	3
Civil Engineering 54 ...	Cement Laboratory	1
Civil Engineering 65 ...	Reinforced Concrete	3
Mech. Engineering 54...	Heating and Ventilation	2
	Thesis	2

ADVANCED COURSES OF STUDY

Based upon one year of selected work in the College.

REQUIREMENTS FOR ADMISSION.

To be admitted to these courses of study the student must have completed all of the entrance requirements for admission to the College, and have completed thirty credit hours of work in the College. His College work should have been selected so that at the close of the year in the College he will have completed, either in entrance work or in College work, the following specified units of work (a unit is understood to mean one complete College entrance unit or five credit hours in the University):

- 4 units in Mathematics.
- 4 units in English.
- 4 units in Foreign Language.
- 1 unit in Physics.

If his work has not been selected to fulfill these requirements, the student will be required to make up all deficiencies.

WORK REQUIRED FOR GRADUATION.

The various courses of study outlined below are designed to give approximately the same amount of technical work as is given in the regular four-year courses of study. But the preceding year spent in College work enables the student to obtain a wider general education and to have a little greater freedom in the selection of some of his scientific and engineering studies. If in College the student has selected one or more of the courses that occur later in his engineering curriculum, he can secure a greater freedom in the selection of optional work to meet his individual needs.

Each course of study is designed to include 138 credit hours of work during the four years in the School of Engineering and two periods of summer work as indicated. In those courses, omitting one or two of the periods of summer work, the required credit hours to be completed in the regular school years are increased to 139 or 140 credit hours, respectively.

In the selection of his work in foreign language, the student is required to complete not less than five units of foreign language, of which at least two and three-fifths units must be in one modern language.

DEGREE GRANTED.

The degree of bachelor of science is granted upon the completion of one of the following courses of study, and the diploma given states the particular course of study pursued and the fact that this course of study is based upon one year's work in college.

CIVIL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

First Semester, 16 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
German, French, or Spanish	Course as approved	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Mech. Drawing 1 and } Mech. Drawing 2... }	{ Free-hand Drawing } { Mechanical Drawing }	2

Second Semester, 17 credit hours.

Mathematics 5 E	Calculus I	5
German, French, or Spanish	Course as approved	3
Chemistry 3	Qualitative Analysis	4
Mech. Drawing 3	Descriptive Geometry	3
Mech. Drawing 4	Machine Drawing	2

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Civil Engineering 2	Surveying	2
Mathematics 6 E	Calculus II	3
Physics 1 E	General Physics	5
Geology 1	Elementary Geology	5
Shop Work 1 and } Shop Work 2..... }	{ Forging and Bench Work... } { Woodworking and Molding.. }	2
	Technical Report I†.....	½

Second Semester, 18 credit hours.

Civil Engineering 2	Surveying	3
Civil Engineering 1.....	Topographical Drawing	2
English 50 E	Advanced Composition	3
Physics 2 E	General Physics	5
Mech. Engineering 5 ...	Engines and Boilers.....	3
	Optional	2

Summer Work.

Civil Engineering 3	Field Work, 4 weeks.	
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JUNIOR YEAR.

First Semester, 17½ credit hours.

Civil Engineering 50 ...	Railway Drawing	1
Civil Engineering 58 ...	Railway Surveying	5
Mechanics 50	Mechanics	5
	Optional	6
	Technical Report II†.....	½

Second Semester, 16½ credit hours.

Civil Engineering 51	... Graphical Statics	3
Civil Engineering 56	... Roads and Pavements	2
Civil Engineering 57	... Railway Location	3
Mechanics 51	... Strength of Materials	4
Mechanics 52	... Testing Laboratory	1
Economics 1	... Elements of Economics	3
	Technical Report III†	½

Summer Work.

Civil Engineering 53 ... Field Work, 4 weeks.

SENIOR YEAR.

First Semester, 17½ credit hours.

Civil Engineering 55	... Masonry	3
Civil Engineering 60	... Hydraulic Laboratory	1
Civil Engineering 68	... Hydraulics	3
Civil Engineering 61	... Roofs and Bridges	5
Civil Engineering 59 or Elect. Engineering 60,	{ Sewerage and Water Supply Elements of Electrical En- gineering	4
	Thesis†	1
	Technical Report IV†	½

Second Semester, 18 credit hours.

Civil Engineering 62	... Bridge Design	5
Civil Engineering 52	... Contracts and Specifications	3
Civil Engineering 54	... Cement Laboratory	1
Civil Engineering 65	... Reinforced Concrete	3
	Optional	4
	Thesis†	2

MUNICIPAL AND SANITARY ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

The same as in Civil Engineering.

SOPHOMORE YEAR.

The same as in Civil Engineering.

JUNIOR YEAR.

First Semester, 16½ credit hours.

Course Number.	Subject.	Credit hrs.
Mechanics 50	Mechanics	5
Civil Engineering 59	Sewerage and Water Supply	4
Civil Engineering 67	Municipal Drawing	2
Chemistry 56 E	Water Analysis	5
	Technical Report II†	½

Second Semester, 17½ credit hours.

Civil Engineering 56	... Roads and Pavements.....	2
Civil Engineering 69	... Sanitary Science	3
Civil Engineering 51	... Graphical Statics	3
Civil Engineering 70	... Sanitary Laboratory	1
Mechanics 51	... Strength of Materials.....	4
Mechanics 52	... Testing Laboratory	1
Economics 1	... Elements of Economics	3
	Technical Report III†.....	½

SENIOR YEAR.

First Semester, 18½ credit hours.

Civil Engineering 55	... Masonry	3
Civil Engineering 60	... Hydraulic Laboratory	1
Civil Engineering 61	... Roofs and Bridges.....	5
Civil Engineering 68	... Hydraulics	3
	Sanitary Journal	1
	Thesis†	1
	Optional	4
	Technical Report IV†.....	½

Second Semester, 18 credit hours.

Civil Engineering 52	... Contracts and Specifications....	3
Civil Engineering 64	... Sanitary Design	5
Civil Engineering 65	... Reinforced Concrete	3
Civil Engineering 54	... Cement Laboratory	1
	Thesis†	2
	Optional	3
	Sanitary Journal	1

ELECTRICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

First Semester, 18 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
Chemistry 2	Advanced Inorganic Chemistry..	4
German, French, or Spanish	Course as approved.....	5
Mech. Drawing 1 and	{ Free-hand Drawing	2
Mech. Drawing 2...		
Shop Work 1 and		
Shop Work 2.....		
	{ Mechanical Drawing	
	{ Forging and Bench Work...	
	{ Woodworking and Molding...	2

Second Semester, 17 credit hours.

Mathematics 5 E	Calculus I	5
Chemistry 3	Qualitative Analysis	4
German, French, or		
Spanish	Course as approved.....	3
Mech. Drawing 3	Descriptive Geometry	3
Mech. Drawing 4	Machine Drawing	2

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Physics 1 E	General Physics	5
Mathematics 6 E	Calculus II	3
Chemistry 64	Physical Chemistry	5
Civil Engineering 2	Surveying	3
Mech. Engineering 1 ...	Machine Drafting	1
	Technical Report I†.....	½

Second Semester, 17½ credit hours.

Mathematics	Course to be elected.....	3
Physics 2 E	General Physics	5
Mech. Engineering 3 ...	Elementary Machine Design.....	3
Mech. Engineering 4 ...	Steam Machinery	2
Economics 1	Elements of Economics	3
Shop Work 3	Pattern Making	1
	Technical Report II†.....	½

Summer Work.

Shop Work, 4 weeks, 44 hours per week.

JUNIOR YEAR.

First Semester, 17½ credit hours.

Elect. Engineering 50 ..	Dynamo Machinery	3
Elect. Engineering 54 ..	Electrical Laboratory	1½
Mechanics 50	Mechanics	5
Physics 52	Theory of Electricity.....	3
Physics 60 E	Electrical Measurements I.....	1½
Mech. Engineering 52 ..	Heat Engine Theory.....	3
	Technical Report III†.....	½

Second Semester, 18 credit hours.

Elect. Engineering 51 ..	Theory of Alternating Currents..	5
Elect. Engineering 55 ..	Electrical Laboratory	1½
Mech. Engineering 53 ..	Mechanics of the Steam Engine..	2
Mechanics 51	Strength of Materials.....	4
Mechanics 52	Testing Laboratory	1
English 50 E	Advanced Composition	3
Physics 61	Electrical Measurements II.....	1½

SENIOR YEAR.

First Semester, 16 credit hours.

Elect. Engineering 52 ..	Advanced Dynamo Machinery....	5
Elect. Engineering 56 ..	Advanced Electrical Laboratory..	1½
Mech. Engineering 65 ..	Heat Engine Laboratory.....	2
	Thesis‡	1
	Optional	6
	Technical Report IV‡.....	½

Second Semester, 17 credit hours.

Elect. Engineering 57 ..	Electric Lighting	3
Elect. Engineering 58 ..	Electric Power Transmission....	5
Civil Engineering 52 ...	Contracts and Specifications....	3
	Optional	3
	Thesis‡	3

One extended inspection trip is required during the Junior or the Senior year. (See page 261.)

MECHANICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

First Semester, 17 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
Chemistry 2	Advanced Inorganic Chemistry..	5
German, French, or Spanish	Course as approved	5
Mech. Drawing 1	Free-hand Drawing	1½
Mech. Drawing 2	Mechanical Drawing	3

Second Semester, 17 credit hours.

Mathematics 5 E	Calculus I	5
Chemistry	Optional	5 or 3
	College Optional	3 or 5
Mech. Drawing 4	Machine Drawing.....	2
Shop Work 1 and } Shop Work 2..... }	{ Forging and Bench Work } { Woodworking and Molding.. }	2

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Mathematics 6 E	Calculus II	3
Physics 1 E	General Physics	5
Mech. Drawing 3	Descriptive Geometry	3
Shop Work 3 and } Shop Work 4 and } Shop Work 5..... }	{ Pattern Making and Founding } { Forging, Filing, Bench Work } { Lathe Work	3
Mech. Engineering 2 ...	Mechanism	3
	Technical Report I‡.....	½

Second Semester, 17½ credit hours.

	Optional	3
Physics 2 E	General Physics	5
Mech. Engineering 6 ...	Steam Engineering	4
Mechanics 50	Mechanics	5
	Technical Report II†	½

JUNIOR YEAR.

First Semester, 17½ credit hours.

Mechanics 51	Strength of Materials.....	4
Mechanics 52	Testing Laboratory	1
Mech. Engineering 51 ..	Thermodynamics	4
Mech. Engineering 64 ..	Mechanical Laboratory	1
Metallurgy 61 E	Metallurgy I	3
	Optional	3
Shop Work 6	Lathe and Machine Tool Work...	1
	Technical Report III†.....	½

Second Semester, 17 credit hours.

Mech. Engineering 50 ..	Machine Design	4
Mech. Engineering 54 ..	Heating and Ventilation	2
Mech. Engineering 69 ..	Shop Administration	2
English 50 E	Advanced Composition	3
Economics 1	Elements of Economics.....	3
Mech. Engineering 65 ..	Heat and Engine Laboratory....	2
Shop Work 7	Tool Making	1

Summer Work.

Shop Work, 4 weeks, 44 hours per week; or, commercial work.

SENIOR YEAR.

First Semester, 18 credit hours.

Mech. Engineering 56 ..	Steam Engine Design.....	2
Mech. Engineering 67 ..	Thesis	1
Civil Engineering 68 ...	Hydraulics	3
Civil Engineering 60 ...	Hydraulic Laboratory	1
Civil Engineering 71 ...	Surveying	3
Elect. Engineering 50 ..	Dynamo Machinery	3
Elect. Engineering 54 ..	Electrical Laboratory	1½
	Technical Report IV†.....	½

OPTIONAL.

Mech. Engineering 61 ..	Structural Design	3
Mech. Engineering 58 ..	Gas Engine Design.....	
Mech. Engineering 60 ..	Hydraulic Design	
Mech. Engineering 55 ..	Refrigeration	

Second Semester, 16½ credit hours.

Mech. Engineering 67 ..	Thesis	2
Mech. Engineering 69 ..	Works Management	2
Civil Engineering 52 ...	Contracts and Specifications.....	3
Elect. Engineering 51 ..	Alternating Currents	3
Elect. Engineering 55 ..	Electrical Laboratory	1½

OPTIONAL.

Mech. Engineering 57 ..	{ Steam Turbine Design..... } { Gas Engine Design II..... } { Industrial Plant Design..... } { Other approved Engineering subject	5
Mech. Engineering 59 ..		
Mech. Engineering 62 ..		

MINING ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

First Semester, 16 credit hours.

Course Number.	Subject.	Credit hrs.
German, French, or Spanish	Course as approved	5
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
	Optional	2
Mech. Drawing 1	Free-hand Drawing	1½
Mech. Drawing 2	Mechanical Drawing	3
Mech. Drawing 4 or Shop Work 1 and Shop Work 2.....	{ Machine Drawing } { Forging and Bench Work.... } { Woodworking and Molding... }	2

Second Semester, 18 credit hours.

Mathematics 5 E	Calculus I	5
German, French, or Spanish	{ Course as approved or } { Optional	3
Mech. Drawing 3	Descriptive Geometry	3
Geology 1	Elementary Geology	5
Mech. Drawing 4 or Shop Work 1 and Shop Work 2.....	{ Machine Drawing } { Forging and Bench Work.... } { Woodworking and Molding.. }	2

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Mineralogy 1 E	Elementary Mineralogy I.....	5
Civil Engineering 2	Surveying	2
Physics 1 E	General Physics	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Mech. Engineering 1 ...	Machine Drafting	1
	Technical Report I½.....	1½
	Mining Journal.....	

Second Semester, 17½ credit hours.

Mining Engineering 60..	Mining Drawing	1
Civil Engineering 2	Surveying	3
Physics 2 E	General Physics	5
Chemistry 3	Qualitative Analysis	4
Economics 1	Elements of Economics.....	3
Shop Work 4	Forging, Filing and Bench Work,	1

Summer Work.

Civil Engineering 3 Field Work, 4 weeks.

JUNIOR YEAR.

First Semester, 18½ credit hours.

Mining Engineering 50..	Mining	5
Mechanics 50	Mechanics	5
Geology 52	Economic Geology I.....	3
Chemistry 54	Quantitative Analysis I.....	5
	Technical Report III†.....	½
	Mining Journal	

Second Semester, 17½ (or 18½) credit hours.

Mineralogy 62 E	Petrography	5
Metallurgy 57	Assaying	5
Geology 53	Economic Geology II.....	2
Mining Engineering 57..	Mining Law	(-) 1
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
	Technical Report IV†.....	½
	Mining Journal	

Summer Work.

Mining Engineering 59.. Field Work.

SENIOR YEAR.

First Semester, 17 credit hours.

Mining Engineering 51..	Ore dressing	3
Mining Engineering 52..	Power, Extraction, etc.	5
English 50 E	Advanced Composition	3
Mining Engineering 58..	Thesis	1
	Optional	5
	Mining Journal	

Second Semester, 15½ (or 16½) credit hours.

Mining Engineering 51..	Ore Dressing	3
Mining Engineering 53..	Sampling and Exploitation.....	2½
Civil Engineering 52 ...	Contracts and Specifications....	3
Mining Engineering 58..	Thesis	2
Metallurgy 62 E	Metallurgy II	5
Mining Engineering 57..	Mining Law	(-) 1

CHEMICAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

NOTE.—Students planning to take the four-year advanced course of study in chemical engineering are very strongly advised to elect chemistry 1 as part of their College work, in addition to the work already recommended in the statement preceding these advanced courses.

FRESHMAN YEAR.

First Semester, 17 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Chemistry 2	Advanced Inorganic Chemistry...	5
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
	Optional	5
Mech. Drawing 1 and } Mech. Drawing 2... }	{ Free-hand Drawing } { Mechanical Drawing }	2

Second Semester, 17 credit hours.

Chemistry 3	Qualitative Analysis	5
Mathematics 5 E	Calculus I	5
Mech. Drawing 3	Descriptive Geometry	3
Mech. Drawing 4	Machine Drawing	2
Shop Work 1	{ Forging and Bench Work... }	2
Shop Work 2		

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Chemistry 54	Quantitative Analysis I.....	5
Physics 1 E	General Physics	5
Mechanics 50	Mechanics	5
Shop Work 4 (modified),	Bench and Lathe Work.....	1
Mech. Engineering 1 ...	Machine Drafting	1
	Technical Report I†.....	½

Second Semester, 18½ credit hours.

Chemistry 55	Quantitative Analysis II.....	5
Physics 2 E	General Physics	5
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
Mech. Engineering 3 or } Mech. Engineering 5 }	{ Machine Design } { Engines and Boilers }	3
	Technical Report II†.....	½

JUNIOR YEAR.

First Semester, 18½ credit hours.

Chemistry 4	Organic Chemistry I.....	5
Metallurgy 61 E	Metallurgy I	3
Geology 1	Elementary Geology	5
English 50 E	Advanced Composition	3
	Optional	2
	Technical Report III†.....	½

Second Semester, 18½ credit hours.

Chemistry 60	Organic Chemistry II	5
Chemistry 51 A	Inorganic Industrial Chemistry..	3
Metallurgy 62 E	Metallurgy II	3
Mineralogy 1 E	Elementary Mineralogy I.....	5
	Optional	2
	Technical Report IV‡.....	½

SENIOR YEAR.

First Semester, 16 credit hours.

Chemistry 51 B	Industrial Organic Chemistry....	2
Chemistry 64	Physical Chemistry	5
Chemistry	Optional	5
	Optional	2
	Thesis‡	2

Second Semester, 17 credit hours.

Chemistry 65	Physical Chemistry	5
Metallurgy 57	Assaying	3
Civil Engineering 52 ...	Contracts and Specifications....	3
Economics 1	Elements of Economics.....	3
	Thesis‡	3

ARCHITECTURAL ENGINEERING.

(BASED ON ONE YEAR OF COLLEGE WORK.)

FRESHMAN YEAR.

First Semester, 18 credit hours.

<i>Course Number.</i>	<i>Subject.</i>	<i>Credit hrs.</i>
Mathematics 4 E	Analytic Geometry and Theory of Equations	5
German, French, or Spanish	Course as approved	5
Chemistry 2	Advanced Inorganic Chemistry..	4
Arch. Engineering 1	Free-hand Drawing	2
Mech. Drawing 2 (modified)	Mechanical Drawing	2

Second Semester, 17 credit hours.

Mathematics 5 E	Calculus I	5
German, French, or Spanish	Course as approved, or Optional..	3
Chemistry 3	Qualitative Analysis	4
Mech. Drawing 3	Descriptive Geometry	3
Arch. Engineering 2	Architectural Drawing	2

SOPHOMORE YEAR.

First Semester, 17½ credit hours.

Arch. Engineering 3	Architectural Design I.....	3
Arch. Engineering 5	History of Architecture I.....	2
Physics 1 E	General Physics	5
Mathematics 6 E	Calculus II	3
Civil Engineering 2	Surveying	2
Shop Work 1 and	{ Forging and Bench Work... }	2
Shop Work 2.....		
	Technical Report I†.....	½

Second Semester, 18 credit hours.

Arch. Engineering 4	Architectural Design II.....	3
Arch. Engineering 6	History of Architecture II.....	2
Physics 2 E	General Physics	5
Mech. Engineering 5	Engines and Boilers.....	3
English 50 E	Advanced Composition	3
	Optional	2

JUNIOR YEAR.

First Semester, 17½ credit hours.

Arch. Engineering 7	Architectural Design III.....	3
Mechanics 50	Mechanics	5
Elect. Engineering 64	Elec. Engineering for Architects,	3
	Optional	6
	Technical Report II†.....	½

Second Semester, 16½ credit hours.

Arch. Engineering 8	Architectural Design IV.....	3
Arch. Engineering 10	Sanitary Construction	2
Mechanics 51	Strength of Materials	4
Mechanics 52	Testing Laboratory	1
Economics 1	Elements of Economics.....	3
Civil Engineering 51	Graphical Statics	3
	Technical Report III†.....	½

SENIOR YEAR.

First Semester, 17½ credit hours.

Arch. Engineering 11	Architectural Engineering I.....	4
Civil Engineering 55	Masonry	3
Civil Engineering 68	Hydraulics	3
Civil Engineering 60	Hydraulic Laboratory	1
Civil Engineering 61	Roofs and Bridges.....	5
	Thesis	1
	Technical Report IV†.....	½

Second Semester, 18 credit hours.

Arch. Engineering 9	Steel Construction	3
Arch. Engineering 12	Architectural Engineering II....	4
Civil Engineering 52	Contracts and Specifications....	3
Civil Engineering 54	Cement Laboratory	1
Civil Engineering 65	Reinforced Concrete	3
Mech. Engineering 54	Heating and Ventilation.....	2
	Thesis	2

EQUIPMENT.

The School of Engineering is part of the general University, hence the entire equipment of the University is also equipment of the School of Engineering in all things in which engineering students are concerned. The work of the Engineering School which is common to several schools of the University, such as mathematics, physics, chemistry, languages, etc., is carried on to some extent in buildings and by departments of instruction not exclusively for engineering students; while such work of the School as is technical and exclusively engineering in character is carried on by departments of instruction primarily for engineering students and largely in buildings erected for the special work of the School. Below is described that part of the general equipment of the University which pertains chiefly to the work of this School. For other equipment, see under "The College" and descriptions of other schools of the University.

BUILDINGS.

The buildings erected exclusively for engineering work are Marvin Hall, the mechanical laboratory in connection with the power plant, and the Fowler Shops. The work in mining is provided for in Haworth Hall. For description of these buildings, see under the heading "Buildings and Grounds."

LIBRARIES.

The general University library is available for the use of engineering students. Collections of books for special use in connection with the studies in the various scientific and technical departments are to be found in the reading rooms of the departmental libraries of Marvin Hall and other buildings. The leading technical journals are also to be found in these reading rooms.

DRAWING ROOMS.

In Marvin Hall there are six large, well-lighted drawing rooms, provided with individual tables containing drawers for each student's outfit and cabinets for drawing boards.

On the walls and contained in various print-cases are photographs of actual constructions, and large numbers of blue-prints of working drawings for bridges, railway structures, sewers, waterworks, power and light stations, mine plants, etc.

LABORATORIES.

Numerous and well-equipped laboratories are provided for experimental work in engineering and scientific studies. These laboratories and equipments are described in detail under the descriptions of the various engineering courses and scientific departments.

CIVIL AND MUNICIPAL ENGINEERING.

The instruments for field work in civil engineering comprise transits, levels, compasses, solar attachments, rods, chains, tapes, plane tables, heliotropes, current meter, aneroids, and other minor instruments. Among these are a precise level for very accurate leveling, a secondary triangulation transit for topographical work, and an altazimuth instrument for use on primary triangulations, which has a ten-inch circle, read to single seconds of arc.

For the summer work in surveying a complete camping outfit is provided. Planimeters, Thatcher and Manheim slide rules, and Colby's stadia slide rules are used for rapid calculation and estimation of quantities.

The testing-of-materials laboratory, situated in the basement of Marvin Hall, is equipped for making tests on all kinds of structural materials.

The principal machines are a 200,000-pound Olsen universal testing machine capable of testing beams up to twenty feet in length and columns up to ten feet in height; two 100,000-pound and one 40,000-pound universal testing machines; a 50,000-inch-pound Olsen torsion machine; a White-Souther alternate-stress machine, and a standard rattler for testing paving brick. The laboratory is well equipped with small apparatus, such as extensometers, both direct-reading and autographic, compressometers, etc.

The concrete laboratory is provided with mixing machinery, molds for making test pieces, and apparatus for the mechanical analysis of sands and cements.

The cement laboratory affords facilities for extended investigation work as well as for the current undergraduate courses.

The road-materials laboratory contains various machines for testing the strength, resistance to abrasion, and the cementing power of the dust of stone, the value of which as material for the building of rock roads is under investigation.

The hydraulic laboratory contains a measuring pit, a large steel orifice tank for experimentation with jets, a triplex power pump, two centrifugal pumps, pipe lines, weir boxes, gauges, a Venturi meter with manometer, a Pelton water mortar, etc., arranged to illustrate the laws of fluid motion, and affording some opportunity for testing hydraulic machinery.

The sanitary laboratory is equipped with apparatus for the investigation of water and sewage. It is not designed to supplant the chemical laboratories, but to afford means for making approximate and quick analyses for engineering purposes of samples suspected of contamination. The laboratory is also to be used in connection with research work along sanitary lines, in connection with an experimental plant for the treatment of the sewage from some of the University buildings.

ELECTRICAL ENGINEERING.

The electrical engineering laboratories are situated in Marvin Hall and comprise a dynamo laboratory, a standardizing laboratory, a photometer room, and space for the telephone equipment.

The dynamo laboratory is fitted with a complete line of both alternating and direct-current machines, the former varying in capacity from a two-horsepower motor to a 50-kilowatt generator, while the direct-current machines range in capacity from one and one-half kilowatts to 20 kilowatts. These machines have been selected essentially with the view of supplying a complete set of experimental machines and to illustrate modern design and practice in dynamo-electric machinery. Individual motor drive is used for all experimental work, and a chain hoist and trolley have been provided for use in quickly moving any of the machines to the position in which they may be required. Very few permanent connections are used, but the switchboards, connecting boards, and testing tables have all been especially designed to facilitate the connection of any piece of apparatus to a proper power supply. Direct current is supplied from the University power plant, but all other voltage supply is through the agency of motor-generator sets in the laboratory. The machines in this room are used also as sources of current supply for the other electrical laboratories. The assortment of field and load rheostats, transformers, reactance coils, etc., is adequate.

In the standardizing laboratory provision is made for the calibration of all types of electrical measuring instruments and for the study of problems in electrical measurements. The equipment consists of a potentiometer, an A. C. - D. C. comparator; laboratory standard ammeters, voltmeters, and wattmeters; a precise Wheatstone bridge; a portable testing set; an inductance bridge; and a three-element oscillograph. These instruments are all equipped with a complete set of auxiliaries such that any ordinary range of potential or current in either direct or alternating currents may be measured. A storage battery is provided as a source of steady current for use in calibrating instruments. The portable instruments used in the dynamo laboratory are cared for in the standardizing room. This set of instruments is very complete and includes the best of foreign as well as American manufacture. In addition to the instruments in regular use this set contains portable meters of suitable types and ranges for the tests of power plants or of machines in regular commercial operation.

The photometer room is fitted with a 300-centimeter photometer bar, which is provided with necessary lamp holders and auxiliaries for the testing of the different types of lamps used in artificial illumination. A Bunsen screen, a Lummer-Brodum screen, and a flicker photometer have been provided for use in connection with this bar. A portable photometer of the Sharp-Miller type is used for studying the illumination of streets and buildings.

The telephone laboratory has an assortment of modern tele-

phone apparatus. This includes complete sets for illustrating installations, of both local battery and central energy types. The best selective systems are represented, as well as a complete small automatic telephone system.

MECHANICAL ENGINEERING.

The mechanical laboratory is a room 48 by 100 feet, with a gallery 16 feet wide extending across one end and along one side about 60 feet. On the gallery floor are office, computing room, storeroom, instrument room, oil room fitted up with special apparatus for testing lubricants, and a fuel-testing room equipped with a Mahler bomb calorimeter, a Parr calorimeter, and apparatus for coal and gas analysis.

On the main floor are installed a 100-horsepower experimental boiler of Stirling water-tube type; an independently fired Foster superheater; a 10 by 24 by 30-inch cross-compound Monarch Corliss steam engine, arranged to belt to a 55-kw. direct-current generator; a 75-horsepower Ball automatic high-speed engine; a 20-horsepower De Laval steam turbine coupled to a centrifugal pump used for circulating water for the condenser; a 10-horsepower Atlas slide-valve engine; a C. H. Wheeler surface condenser of 600 square feet surface, equipped with wet and dry vacuum pumps; a 100-horsepower two-cylinder tandem Riverside gas engine direct-connected to the 55-kw. generator above mentioned; two 8-horsepower gas or gasoline engines; a 75-horsepower Smith suction gas producer; a five-ton Cleveland ammonia compressor, motor driven, with submerged condenser and fittings complete, including a small ice box (can system), and an auxiliary brine cooler; several special lubricant-testing machines; a complete air-brake outfit for train service; and other minor pieces of apparatus. A representative outfit of engine indicators, steam calorimeters, etc., is owned by the department.

MINING ENGINEERING.

The building for geology and mining (Haworth Hall) was so planned as to give excellent opportunity for the concentration of ores. The ore-dressing laboratory, 40 by 80 feet, is connected to the main building by a corridor, and is so placed on a slope that the floor is divided into four steps, allowing ore to be carried from one floor to the other by gravity. The equipment consists of crushing, screening, and classifying apparatus of various kinds, giving practice in all of the principal processes of ore dressing. There has recently been added a coal-washing plant for experimental work on a large scale. The mining museum contains models of mines and a collection of mills and apparatus used in mining and milling operations. A large laboratory has been equipped for making a thorough and complete examination of the clays of Kansas.

CHEMICAL ENGINEERING.

The chemical laboratories are located in the Chemistry and Pharmacy Building. They contain separate rooms for general chemistry, qualitative analysis, quantitative analysis, organic chemistry, physical chemistry, water analysis, food analysis, assaying, and metallurgy. Dispensing and balance rooms and the offices of the instructors are conveniently located about the building. There are several lecture and recitation rooms, the largest seating more than three hundred students. There is also a departmental library, containing sets of the principal chemical journals, as well as carefully selected reference books upon the subject. The department is well supplied with all the necessary and usual apparatus for lecture illustration and demonstration, for laboratory work in all the undergraduate courses, together with adequate equipment for effective graduate and research work in analytical, organic, physical, industrial, and metallurgical chemistry. A somewhat unusual piece of equipment is a well-working liquid-air plant, which affords excellent opportunity for work at low temperatures.

THE FOWLER SHOPS.

The equipment of the shops is selected with a view to its being the means of teaching modern methods of machine construction, rather than to develop individual skill. The order of progress of the student through the various departments is consistent with the same idea.

In producing castings for machines the first step of pattern making is provided for, in a room 50 by 80 feet on the second floor, by benches and bench tools of high class, sufficient for a class of eighteen in a single section; twelve Richardson 11 by 28-inch speed-lathes with full tool equipment; a complete pattern-maker's lathe, 18 in. by 12 ft., and a 7-foot faceplate lathe; a combination table saw, an Oliver band saw, and a scroll saw; a power-driven boring machine and a sandpapering machine, motor-driven group system; and special hand tools to facilitate accurate and rapid work. The second step—that of the actual casting—is provided for by foundry equipment in a room 60 by 66 feet, consisting of a Whiting melting cupola of one and one-half tons capacity per hour; a brass furnace complete; an automatic molding machine; a core machine and full equipment for core work; and all necessary hand tools for work in a molding room, arranged in typical modern fashion. An elevator to the cupola-charging platform, and a geared tumbler and a grinder for cleaning castings, are included.

For preparing wrought metals, and for making cutting tools, the forge shop, 40 by 50 feet, is equipped with sixteen Sturtevant down-draft forges and one large forge for heavy work, with a full complement of smithing tools, a Little Giant power hammer to facilitate rapid work and to familiarize students with its use.

For the final work of machine construction, the machine shop,

a room 50 by 80 feet, is supplied with fourteen 14 in. by 6 ft. Standard engine lathes; one 18 in. by 12 ft. and one 14 in. by 5 ft. Challenge engine lathes with full attachments; one Jones and Lawson 2 in. by 24 in. turret lathe with chucking attachments; one 26 in. by 26 in. by 7 ft. Gray planer; one Universal milling machine with spiral gear cutter and all attachments; a Lucas No. 21 precision horizontal boring, drilling and milling machine, with individual motor; one 15 in. crank shaper; one 25 in. Challenge drill press with automatic feed; three 20 in. drill presses; one sensitive drill press; one 1½ in. bolt cutter; one Universal cutter and reamer grinder; one Yankee drill grinder; and other power dry and wet grinders, etc. The room has 160 feet of benches with twenty vises and a good outfit of hand tools, which, with stock and supplies, are kept in a tool room under the care of a skilled attendant, the students being held to a rigid observance of shop rules. Electric-motor drive by the group system is used throughout the shop.

THE POWER PLANT.

The power plant is in the same building with the mechanical engineering laboratory, and is designed for the double purpose of furnishing light and power to the entire University and of giving engineering students an opportunity to study power costs with modern equipment.

The boiler-room equipment consists of two 150-horsepower Bonus-Kennicott water-tube boilers, equipped with Jones under-feed stokers; a Sturtevant economizer; and an induced-draft system with motor-driven fan. A pressure of 150 pounds is carried. All feed water is metered with a Worthington piston meter, and coal-weighting scales are provided.

In the generator room is a 150-kw. 115-230 volt three-wire direct-current Western Electric Generator, direct-connected to an 11 in. by 19 in. by 16 in. cross-compound Ball engine making 225 revolutions per minute; a 100-kw. 2300-volt, three-phase 60-cycle Curtis turbo-alternator built by the General Electric Company; a 75-kw. motor-generator set for alternating-current and direct-current, with synchronous motor, by means of which both forms of current may be delivered with one steam machine in operation; one 8 in. by 12 in. by 7 in. by 12 in. compound duplex Advance service pump for the general water supply of the University and one large high-pressure Underwriter's pump for fire protection.

All the main engines and pumps exhaust into one 1200 sq. ft. surface condenser equipped with both wet and dry vacuum pumps for high-vacuum service and a centrifugal circulating pump. All pumps are motor driven. Crane pipe and fittings have been used throughout the plant.

The switchboard is of General Electric design, and is fully appointed, with complete outfit of recording and indicating meters. Six single-phase lighting circuits, one three-phase power circuit, and three three-wire direct-current power circuits supply the University buildings through an underground conduit system installed by the Standard Underground Cable Company.

DESCRIPTION OF COURSES.

Courses that are given in only the first half of a semester are indicated by (a); those given in the second half of a semester by (b). The statement of "hours" refers to the number of hours per week in attendance at class. The value of each course is given in "credits," one credit being equivalent to one hour per week of recitation or lecture carried for a semester. (See "The Course and the Credit Hour" page 206.)

ARCHITECTURAL ENGINEERING.

Professor _____.
Professor GRIFFITH.
Associate Professor H. A. RICE.

1.—FREE-HAND DRAWING. Charcoal and pencil drawing from the cast. Six hours, two credits, first semester. Griffith.

2.—ARCHITECTURAL DRAWING. Theory of perspective, free-hand perspective, shades and shadows. Six hours, two credits, second semester. Griffith.

3.—ARCHITECTURAL DESIGN I. Planning, detailing, working drawings, and detailed sketching from work in course of construction. Nine hours, three credits, first semester. _____.

4.—ARCHITECTURAL DESIGN II. Continuation of course 3, with especial reference to materials used in construction, brick, stone, wood, terra-cotta, cast iron, steel, and the detailing of materials as used in buildings. Nine hours, three credits, second semester. _____.

5.—HISTORY OF ARCHITECTURE I. This course will take up the architecture of Egypt, Assyria, Greece, and Rome, and will include a study of the materials used as well as of the methods of planning and design. Two credits, first semester. _____.

6.—HISTORY OF ARCHITECTURE II. A continuation of course 5 to include the Romanesque, Gothic, and Renaissance. It will also include the architecture of the United States. Two credits, second semester. _____.

7.—ARCHITECTURAL DESIGN III. A study and analysis of examples of classical architecture, designed to train the student in the esthetics of architecture and make clear the fundamentals of architectural design. In this course practice in designing and rendering will be given. Three credits, first semester. _____.

8.—ARCHITECTURAL DESIGN IV. Architectural loads, foundations, building laws, fireproofing, and specifications. Three credits, second semester. _____.

9.—STEEL CONSTRUCTION. A course in mill building, designed with especial reference to trusses, columns and crane girders. Three credits, second semester. H. A. Rice.

10.—SANITARY CONSTRUCTION. Plumbing, sewerage, water and its purification. A course of lectures on general health problems will be given. Two credits, second semester. ———.

11.—ARCHITECTURAL ENGINEERING I. Detailing and designing in timber construction, with lectures on timber cutting, growth and seasoning. Four credits, first semester. ———.

12.—ARCHITECTURAL ENGINEERING II. Steel building design, with details. The second half of the semester will be devoted to reinforced concrete design, floors, columns and girders. Four credits, second semester. ———.

BACTERIOLOGY.

Associate Professor BILLINGS.

Assistant Professor C. C. YOUNG.

53E.—SANITARY WATER ANALYSIS. (See chemistry 56E.) Open to students in engineering and to College Juniors and Seniors who have taken chemistry 3. Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Both semesters, 10 hours, daily, 8 to 10. Five credits. C. C. Young.

For other courses in bacteriology, see The College.

CHEMISTRY.

Professor E. H. S. BAILEY.

Professor CADY.

Associate Professor DAINS.

Associate Professor WHITAKER

Assistant Professor ALLEN.

Assistant Professor C. C. YOUNG.

Mr. RODEBUSH, Instructor.

2.—ADVANCED INORGANIC CHEMISTRY. Required of Sophomores, first semester. For all but chemical engineering students, lectures and recitations on Monday, Wednesday, and Friday, at 8; laboratory two hours, Tuesday or Thursday, 8 to 10 or 1:30 to 3:30; total of four credits. For chemical engineering students, lectures and recitations on Monday, Wednesday, and Friday, at 8; laboratory four hours, Tuesday and Thursday, 8 to 10 or 1:30 to 3:30; total of five credits. Cady and assistants.

3.—QUALITATIVE ANALYSIS. Required of Sophomores, second semester. For all but chemical engineering students, recitations on Tuesday and Thursday, at 8; laboratory four hours, Monday and Wednesday or Wednesday and Friday, 8 to 10 or 1:30 to 3:30; total of four credits. For chemical engineering students, recitations on Tuesday and Thursday at 8; laboratory six hours,

Monday, Wednesday, and Friday, 8 to 10 or 1:30 to 3:30; total of five credits. Cady and assistants.

4.—ORGANIC CHEMISTRY I. Required of chemical engineering students. Lectures, recitations, and laboratory work in aliphatic series. Must be preceded by courses 2 and 3. Junior, first semester, seven hours; lecture and recitations, Monday, Wednesday, and Friday; laboratory Tuesday and Thursday, 1:30 to 3:30. Five credits. Dains.

5E.—ENGINEERING CHEMISTRY. Required of mechanical and civil engineering students, second semester. Recitations Tuesday and Thursday, at 9; laboratory Friday, 1:30 to 4:30. Cady and assistants.

50E.—GAS ANALYSIS. A laboratory course in the quantitative determination of the common gases, analysis of gaseous mixtures, natural gas, flue gases, etc. Must be preceded by course 54. Optional, first semester, four hours, by appointment. Two credits. Allen.

51A.—INORGANIC INDUSTRIAL CHEMISTRY. Required of Junior chemical engineering students. Three hours, second semester, at 11:15. A study of the inorganic industries, including such topics as the manufacture of acids, alkalis and other chemicals, fertilizers, paints and pigments, glass and cement and the purification of water. Prerequisites, courses 1, 2, 3. Whitaker.

51B.—ORGANIC INDUSTRIAL CHEMISTRY. Required of Senior chemical engineering students. Two hours, first semester, at 9. A study of the organic industries, including such topics as the refining of petroleum, the distillation of wood and coal, packing houses, fermentation, soaps, leather, paper, starches, sugars, dyestuffs, etc. Prerequisite, courses 1, 2, 3, 4. Whitaker.

52E.—ELECTROLYTIC ESTIMATION OF METALS. A laboratory course. Must be preceded by course 54. Optional, second semester, four hours, by appointment. Two credits. Allen.

53E.—ANALYSIS OF BOILER FEED WATER. Must be preceded by course 54. Optional, first semester, four hours, by appointment. Two credits. C. C. Young.

54.—QUANTITATIVE ANALYSIS I. Lecture and laboratory work. Must be preceded by course 3. Required of chemical and mining engineering students. Both semesters. First semester, ten hours, 10:25 to 12:15 or 3:30 to 5:30; second semester, ten hours, 10:25 to 12:15. Five credits. Allen and assistants.

55.—QUANTITATIVE ANALYSIS II. Lecture and laboratory work. Required of chemical engineering students. In the latter part of the course the volumetric analysis of ores and metallurgical products will be taken up. Second semester, ten hours, 1:30 to 3:30. Five credits. Allen and assistants.

56E.—SANITARY WATER ANALYSIS. (See bacteriology 53E.) Open to students in engineering and to College Juniors and Seniors who have taken chemistry 3. Part of the semester will be devoted to bacteriological technic and reading along general lines, followed by special work on the bacteriology of water and

sewage. The remainder of the semester will be spent in chemical quantitative analysis of water and sewage and interpretation of results of sanitary tests. Both semesters, 10 hours, daily, 8 to 10. Five credits. C. C. Young.

59.—WATER ANALYSIS. Three hours, second semester, by appointment. Laboratory work and conferences upon assigned readings. The course covers sanitary, mineral and boiler feed water analysis, together with the principles and practice of the purification of water for municipal and other uses. Pre-requisite, course 54. C. C. Young.

60.—ORGANIC CHEMISTRY II. A continuation of course 4. Lectures, recitations, and laboratory work, including the aromatic and other cyclic compounds. Must be preceded by course 4. Required of chemical engineering students. Junior, second semester, seven hours, 3:30 to 5:30. Five credits. Dains.

64.—PHYSICAL CHEMISTRY. A course paying special attention to electrochemistry. Lectures and laboratory work. Must be preceded by course 54, or by course 3 and physics 1E and 2E and mathematics 7. Required of chemical and electrical engineering students; optional for mining engineers. First semester, six hours, at 10:15. Five credits. Cady.

65.—PHYSICAL CHEMISTRY. A general course in theoretical and physical chemistry. Lectures and laboratory work. Required of chemical engineering students. Second semester, seven hours, at 10:25. Five credits. Cady.

Other courses in chemistry are open as optionals to chemical engineering students. See The College.

CIVIL AND MUNICIPAL ENGINEERING.

Dean MARVIN.

Professor DALTON.

Professor BEGG.

Associate Professor H. A. RICE.

Assistant Professor H. GARDNER.

Assistant Professor STRADLING.

Mr. MELIN, Instructor.

Mr. J. O. JONES, Instructor.

1.—TOPOGRAPHICAL DRAWING. A study of and practice in the conventional methods of representing topography, coupled with the platting of the results of field practice in connection with surveying. Required of Sophomore civil and mining engineering students, second semester, six hours, Monday and Wednesday, or Thursday and Friday, 1:30 to 4:30. Two credits. Melin.

2.—SURVEYING. Engineer's instruments, their construction and adjustment. Methods of marking and platting land, topographic, mining, and hydrographic surveys. Sources of error and means of controlling the precision of field work. Leveling and earthwork. Required of civil and mining engineering students. Sophomore, first semester, two hours, at 8 or 10:15, two credits, and second semester, two hours, 10:25 or 11:25, and field practice once a week. Three credits. Dalton, Melin.

3 or 53.—SUMMER FIELD WORK. Courses in practical surveying. The character of the work done will vary somewhat from year to year, depending upon the make-up of the body of students that go into camp. Ten hours per day for four weeks, at the close of the college year, in June. Dalton and assistants.

50.—RAILWAY DRAWING. Railway plats, profiles, and plans for track and small structures. Lectures and drawing-room practice in tracing and blue-printing and in platting the results of field work. Junior, first semester, three hours, Tuesday, 1:30 to 4:30. One credit. Dalton.

51.—GRAPHICAL STATICS. The properties of equilibrium polygons and other methods of representing the actions of forces, with application to the determination of stresses in beams, roof-trusses, and stone arches. Lectures and drawing. Junior, second semester, nine hours, 1:30 to 4:30. Three credits. Gardner.

52.—CONTRACTS AND SPECIFICATIONS. An elementary course in the law of contracts, with special reference to engineering practice. The technical features of specifications. Methods of procedure in letting and conducting contract work, and the engineer's relation thereto. Required of all engineering students. Senior, second semester, three hours, at 11:25. Three credits. Marvin.

54.—HYDRAULIC CEMENT. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. Senior, second semester, two hours, Monday or Thursday, 3:30 to 5:30. One credit. Gardner.

55.—MASONRY. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, cofferdams, caissons, piles and pile driving, concrete, pneumatic processes, etc. Senior, first semester, three hours, at 11:25. Three credits. Gardner.

56.—ROADS AND PAVEMENTS. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. The economic importance of the "good-roads movement." Junior, second semester, two hours, at 11:25. Two credits. Dalton.

57.—RAILWAY LOCATION. The principles involved in economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Junior, second semester, three hours, at 9. Three credits. Dalton.

58.—RAILWAY SURVEYING. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavations and embankments. Yards, turnouts, and switches. Easement curves of va-

rious types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. Junior, first semester, four hours, at 9, with field practice one-half day per week. Five credits. Dalton.

59.—SEWERAGE AND WATER SUPPLY. An elementary course in the collection, removal and disposal of city sewage. Separate and combined systems. Principles of the design and construction of sewers and storm drains. Brief study of the treatment of sewage by the standard processes. The collection, purification and distribution of water supplies. Requisites of a supply as to quality and quantity. Design of distribution, collection, storage and treatment works. First semester, four hours, at 9. Four credits. Begg.

60.—HYDRAULIC LABORATORY. A course to accompany course 68. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Required of civil and mechanical engineering students. Senior, first semester, two hours, Monday, Wednesday, or Friday, 3:30 to 5:30. One credit. Begg, J. O. Jones.

61.—ROOFS AND BRIDGES. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 51 in mechanics. Senior, first semester, ten hours, 1:30 to 3:30. Five credits. H. A. Rice.

62.—BRIDGE DESIGNING. A study in bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 61. Senior, second semester, ten hours, 1:30 to 3:30. Five credits. H. A. Rice.

63.—ENGINEERING MATERIALS. A study of the methods of manufacture of structural materials and the different means and machines used in their testing. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the laboratory. Recitations, lectures, library, and laboratory work. Optional for Seniors, second semester, five hours, by appointment. Five credits. H. A. Rice.

64.—SANITARY ENGINEERING DESIGN. An advanced course, to follow course 59. A more detailed study of the principles of good design of engineering works for sewerage and drainage, for the purification of public water supplies, and for the treatment of city sewage and of industrial wastes. Lectures, recitations and library reading; drawing-board designs of typical constructions; visits to sanitary engineering works. Senior, second semester, five hours, at 8. Five credits. Begg.

65.—REINFORCED CONCRETE. A course in the modern theory and practice of the design of beams, floor slabs, columns, retaining walls, conduits, arches, and other forms of reinforced concrete construction. Mathematical theory, study of plans, and

design of typical structures. Senior, second semester, three hours, at 9. Three credits. H. A. Rice.

66.—MAINTENANCE OF WAY. An advanced course in railway engineering. Optional for Seniors, second semester, four hours, at 8. Four credits. Dalton.

67.—MUNICIPAL ENGINEERING DRAWING. A drawing-room course dealing with city maps and plats, street profiles and cross-sections, sewerage and drainage maps, standard plans for street pavements, street intersections, catch basins, storm-water drains, concrete bridges, and other work commonly found in a city engineer's office. Junior, first semester, six hours, Monday and Wednesday, 1:30 to 4:30. Two credits. Begg.

68.—HYDRAULICS. A study of the laws governing the pressure and flow of liquids. Calculation of the flow through pipes and over weirs. The principles and types of pumping and hydraulic power machinery. Senior, first semester, three hours, at 10:25. Three credits. Begg.

69.—SANITARY SCIENCE AND PUBLIC HEALTH PROBLEMS. A broad and general view of the large body of sanitary science upon which the modern practice of sanitation is based. The effects of good practice in such matters as public water supply, sewerage and drainage, state and federal control over the pollution of streams, street cleaning, refuse collection and disposal, and the ventilation of public buildings. Junior, second semester, three hours, at 9. Three credits. Begg.

70.—SANITARY ENGINEERING LABORATORY. A laboratory course in connection with experiment station work in water or sewage purification. Quick approximate methods of testing sewage effluents and of securing information relative to the controlling characteristics of water supplies. Junior, second semester, two hours, Tuesday, 3:30 to 5:30. One credit. Begg.

71.—SURVEYING. A briefer course than number 2, primarily for Senior mechanical and electrical engineering students. First semester, three hours, at 11:15. Three credits. Dalton.

72.—SANITARY INSPECTION AND REPORTS. Visits to neighboring engineering works of sanitary interest, particularly water-works and water and sewage purification plants, and to various municipal works in process of construction. By appointment. Begg.

For other courses in civil engineering, see The College.

ECONOMICS.

Professor MILLIS.
Assisstant Professor PUTNAM.

1.—ELEMENTS OF ECONOMICS. Three hours. Given each semester, at 10:25, 11:25, and 2:20. This course endeavors to explain the general laws of man's relation to wealth. While it furnishes the basis for the scientific understanding of business activities and serves as a foundation for all courses in economics, it is essentially a concrete, analytical study of the phenomena of economic life. Millis and Putnam.

ELECTRICAL ENGINEERING.

Professor SHAAD.

Assistant Professor C. A. JOHNSON.

Mr. HANSON, Assistant Instructor.

Courses 50 to 52, and 54 to 58, inclusive, and 61 are required of all electrical engineering students. Courses 50, 53, 54, and 55 are required of mechanical engineering students. Courses 59 and 62 are optional for electrical engineering students.

50.—DYNAMO MACHINERY. Theory of direct-current generators and motors. Prerequisites, physics 1E and 2E. Junior, first semester, three hours, at 11:25 for electrical engineering students and at 8 for senior mechanical engineering students. Three credits. C. A. Johnson.

51.—THEORY OF ALTERNATING CURRENTS. A mathematical treatment of alternating-current phenomena and the theory of alternating-current machinery, fundamental types. Prerequisite, course 50. Junior, second semester, five hours, at 11:25, for electrical engineering students. Five credits. Shaad.

52.—DYNAMO MACHINERY. Advanced theory of alternating-current machinery. Senior, first semester, five hours, daily, at 8. Five credits. Shaad.

53.—THEORY OF ALTERNATING CURRENTS. A study of the theory of alternating currents and alternating-current machinery, together with a discussion of motor applications. Prerequisite, course 50. Senior, second semester, three hours, at 8, for mechanical engineering students. Three credits. Shaad.

54.—ELECTRICAL LABORATORY. An experimental course for the purpose of illustrating the principles of direct-current dynamo machinery and acquainting the student with the types and performance of direct-current apparatus. Must be preceded or accompanied by course 50. Junior, first semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. One and one-half credits. C. A. Johnson and Hanson.

55.—ELECTRICAL LABORATORY. A continuation of course 54. Must be preceded or accompanied by course 51. More advanced work with direct-current machinery is given and experiments with alternating-current apparatus are introduced. Some time is devoted to the calibration of electrical instruments. Junior, second semester, three hours, two days per week on alternate weeks, 1:30 to 4:30. One and one-half credits. C. A. Johnson and Hanson.

56.—ELECTRICAL LABORATORY. Advanced experiments with electrical machinery and the testing of machines, chiefly of alternating-current types. Must be accompanied by course 52. Senior, first semester, three hours, two days per week, 1:30 to 4:30. Two credits. Shaad and Hanson.

57.—ELECTRIC LIGHTING. A course in illumination and photometry in which the available light sources are studied, and the methods of application to artificial illumination of streets and buildings are discussed. Laboratory and field work in the

measurement of light sources and illumination. Senior, second semester, three hours, at 11:25. Three credits. C. A. Johnson.

58.—ELECTRIC POWER TRANSMISSION AND ELECTRIC RAILWAYS. A series of lectures and recitations devoted to the study of the principles involved and the methods used in the design of transmission and distributing systems and the theory and practice of the design, construction and operation of electric railway systems. Prerequisite, course 52. Senior, second semester, five hours, at 9. Five credits. C. A. Johnson.

59.—ELEMENTARY TELEPHONY. Lectures, recitations, and laboratory work. The principles that underlie all telephone apparatus, and practical experiments with the fundamental telephone transmitters, receivers, and central-station arrangements. Optional, Juniors or Seniors, second semester, five hours, by appointment. Five credits. Shaad.

60.—ELEMENTS OF ELECTRICAL ENGINEERING. A course covering the general field of electrical engineering and prepared especially for civil engineering students. Junior or Senior year, second semester, five hours, at 9. Five credits. Shaad.

61.—PROFESSIONAL THESIS. Senior, first semester, three hours, and second semester, nine hours, by appointment. Shaad, or other instructors, according to the line of work chosen.

62.—ELECTRICAL ENGINEERING PRACTICE. The discussion of practical engineering problems as presented to the professional engineer and the determination of the most suitable electrical machinery to be selected for the work to be done. The course is complementary to mechanical engineering 59. Optional, Seniors, second semester, three hours, at 10:25. Three credits. Shaad.

63.—ADVANCED ELECTRICAL LABORATORY. A continuation of electrical laboratory 56. More advanced and extended experiments with electrical machinery and circuits, introducing the experimental study of transient electrical phenomena. Seniors, second semester, by appointment. Five credits. C. A. Johnson.

64.—ELECTRICAL ENGINEERING FOR ARCHITECTS. A course covering electrical installation for buildings. For students in architectural engineering, either Junior or Senior year. First semester, three hours, at —. Three credits. Shaad.

ENGLISH LANGUAGE AND LITERATURE.

Assistant Professor RAYMOND.
Mr. McCARTY, Instructor.
Miss LAIRD, Instructor.

The instruction in this department, while in essentials parallel to that in the College, is shaped with special reference to the other work of engineering students. The three courses here numbered are required before graduation; for students who wish to spend more time in work of this kind a research class is provided, and appropriate classes in the College are open.

1E.—RHETORIC. Written exercises and papers, with study of language usage. Required of all Freshmen. First semester,

three hours, at 8, 9, 10:25, 11:25, 3:30, or 4:30. Three credits. Raymond, McCarty, and Laird.

2E.—RHETORIC. Continuation of course 1. Second semester, two hours, at 8, 9, 10:25, 11:25, 3:30, or 4:30. Two credits. Raymond, McCarty, and Laird.

50E.—ADVANCED COMPOSITION. Practice in the gathering and analyzing of material, and in the presentation of information and opinion in scientific papers, and study of the methods used in these and other papers. Required of all students, one semester in Junior or Senior year, three hours: first semester, at 8; second semester, at 9. Three credits. Raymond.

INDEXING AND RESEARCH IN THE LITERATURE OF ENGINEERING SCIENCE. Informal class, with headquarters in the office of this department, meeting once a week for conference, and working in the material of the engineering library.

The department of English is provided with references, illustrative matter, and other helps for reading in general and in engineering literature, and in the preparation of special papers.

GEOLOGY.

Professor HAWORTH.
Assistant Professor TODD.
Assistant Professor TWENHOFEL.

1.—ELEMENTARY GEOLOGY. A study of the elementary principles of geology, including a general outline of geologic principles and geologic agencies. An acquaintance with the elements of chemistry, zoölogy, and botany will be of advantage in this course. Required of Junior civil and Sophomore mining engineering students; first semester, five hours, at 9, 10:25, 11:25, or 2:30; second semester, at 9, 10:25, 11:25, or 2:30. Five credits. Todd and Twenhofel.

52.—ECONOMIC GEOLOGY I. A general study of the metallic and nonmetallic products of the mine and quarry, considered from a scientific and practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and course 1, or mineralogy 1E. Required of Junior mining engineering students, first semester, lectures and library work, three hours, Monday, Wednesday, and Friday, at 9. Three credits. Haworth.

53.—ECONOMIC GEOLOGY II. A continuation of course 52. Nonmetallic products. Second semester, two hours, Tuesday and Thursday, at 10:25. Two credits. Haworth.

Other courses in geology are open as optionals to engineering students. For details, see the courses listed under The College.

GERMAN.

Dr. SEIPT, Instructor.

Mr. STUBBS, Assistant Instructor.

Mr. KELLERMANN, Assistant Instructor.

1.—OUTLINE OF GRAMMAR. The first twenty-two lessons of Carruth's Otis's Grammar, with composition exercises; Carruth's Reader, about fifty pages. First semester, five hours, at 9. Five credits. Stubbs.

2.—READER AND GRAMMAR. The last eight lessons of Carruth's Otis's Grammar; Carruth's Reader completed. Schiller's Wilhelm Tell. First semester, five hours, at 1:30; second semester, five hours, at 9. Five credits. Seipt and Stubbs.

3.—GERMAN PROSE. Lessing's Minna von Barnhelm; extracts from Schiller's Der dreiszigährige Krieg, preceded by a review of grammar. First semester, five hours, at 8; second semester, five hours, at 10:25. Five credits. Seipt and Kellermann.

4.—SCHILLER'S WALLENSTEIN; SCIENTIFIC PROSE. Second semester, five hours, at 8. Five credits.

MATHEMATICS.

Associate Professor ASHTON.

Assistant Professor WHITE.

Assistant Professor JORDAN.

Assistant Professor DUVAL.

Mr. WHEELER, Instructor.

2.—COLLEGE ALGEBRA. Review of elementary algebra; graphic representation; logarithms; determinants. Required of all Freshmen in the School of Engineering; first semester, three hours, at 8, 9, 10:25, 11:25, 2:30, or 3:30; second semester, three hours, at 3:30. Three credits. Jordan, Duval, and Wheeler.

3.—PLANE TRIGONOMETRY. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Required of all Freshmen in the School of Engineering. First semester, two hours, at 8, 9, 10:25, 11:25, 2:30, or 3:30; second semester, two hours, at 1:30 or 3:30. Two credits. Jordan, Duval, and Wheeler.

4E.—THEORY OF EQUATIONS AND ANALYTIC GEOMETRY. Elementary theory of equations; Horner's method; the straight line and circle; conic sections; higher plane curves; solid analytic geometry. Required of all Freshmen in the School of Engineering. First semester, five hours, at 9; second semester, five hours, at 8, 9, 10:25, 11:25, or 2:30. Five credits. Ashton, White, Jordan, Duval, and Wheeler.

5E.—CALCULUS I. Differential calculus; applications to geometry and mechanics; maxima and minima; integral calculus; simple applications to lengths, areas, and volumes. Required of all Sophomores in the School of Engineering. First semester, five hours, at 9, 10:25, and 11:25; second semester, five hours, at 9. Five credits. Ashton, White, Jordan, and Duval.

6E.—CALCULUS II. Applications of the calculus to problems in solid geometry; double and triple integration; applications to areas, volumes, centers of gravity, and moments of inertia; simple differential equations. Required of all Sophomores in the civil, electrical, and mechanical courses. First semester, three hours, at 10:25; second semester, three hours, at 10:25 and 11:25. Three credits. Ashton and White.

7E.—SELECTED TOPICS IN ENGINEERING MATHEMATICS. Complex numbers and vectors; exponential and trigonometric series; differential equations of electrical and mechanical engineering; empirical curves; methods of approximation and numerical calculation. The course may be modified to suit the needs of the class. Optional for Juniors and Seniors. Second semester, three hours, by appointment. Jordan.

For other courses in mathematics, see The College.

MECHANICAL DRAWING.

Associate Professor HOOD.
Assistant Professor COCHRAN.
Mr. MELIN, Instructor.
Mr. J. O. JONES, Instructor.

1.—FREE-HAND DRAWING. Engineering lettering in pencil and in ink. Free-hand working sketches of simple machine parts. Freshman, first nine weeks of both semesters; Monday, Wednesday, and Friday, at 8 to 10, 10:25 to 12:15; Monday and Thursday, 1:30 to 4:30; Tuesday and Friday, 1:30 to 4:30; or Wednesday, 1:30 to 4:30, and Saturday, 8 to 11, six hours. One credit. Hood, Cochran, Melin, and J. O. Jones.

2.—ELEMENTARY MECHANICAL DRAWING. Working drawings of simple machine parts. Penciling, tracing, and blue-printing. Detailing machine parts from assembly drawings. Freshman, last nine weeks of both semesters, same hours as in course 1, six hours. One credit. Hood, Cochran, Melin, and J. O. Jones.

3.—DESCRIPTIVE GEOMETRY. Principles of projection. Execution of a large number of original exercises. Freshman, second semester, three hours, at 8, 9, 10:25, 11:25, 2:30, or 3:30, also first semester, at 9. Three credits. Hood, Cochran, Melin, and J. O. Jones.

4.—MACHINE DRAWING. Sketching of machine parts and preparation of working drawings; detailing of machines from sketches, notes, assembly drawings and assembled machines; tracing and blue-printing; notes and lectures on drafting-room methods. Each student prepares complete drawings for some simple machine. Freshman, both semesters, same hours as in course 1, six hours. Two credits. Hood, Cochran, and J. O. Jones.

MECHANICAL ENGINEERING.

Professor WALKER.
Assistant Professor COCHRAN.
Assistant Professor SLUSS.
Assistant Professor SIBLEY.
Mr. GARVER, Instructor.

1.—MACHINE DRAFTING. Making of working drawings from sketches of assembled parts followed by an assembly drawing from detailed working drawings. Sophomore, first semester, Monday or Wednesday, 1:30 to 4:30, three hours. One credit. Garver.

2.—MECHANISM. A study of the motion of machine parts and of methods of transmission of motion by gears, belts, cams, and links. Recitations and drawing for mechanical students. Text, "Mechanism." Sophomore, first semester, Tuesday and Thursday at 11:25, and Thursday 1:30 to 4:30. Three credits. Garver.

3.—ELEMENTARY MACHINE DESIGN. Design of representative machine parts. Assembly of such parts and study of their relative motions. Sophomore, second semester, for electrical engineering students. Tuesday and Thursday at 9, and 1:30 to 4:30 on Thursday. Three credits. Garver.

4.—STEAM BOILERS. (a) Fuels, combustion, and steam generation. (b) A study of boiler and engine types. Principal text, Kent's "Steam Boiler Economy." Sophomore, second semester, two hours, Monday and Wednesday, at 10:25 or 11:25. Two credits. Cochran.

5.—ENGINES AND BOILERS. A brief study of the general problem of steam-power generation from the standpoint of the installing engineer. Text, "Heat Engines," by Allen and Bursley. Required of civil engineering students. Sophomore, second semester, Monday, Wednesday and Friday, at 9, and five exercises in the steam laboratory on Saturday, 8 to 12. Three credits. Garver.

6.—STEAM ENGINEERING. Elements of steam machinery, with special reference to combustion of fuels, boiler types, and engine mechanism, including the study of valve gears by the Bilgram diagram. Laboratory practice in proximate analysis of coal, and flue-gas analysis. Sophomore, second semester, for mechanical engineering students. Monday, Wednesday and Friday, at 11:15, and Thursday, 1:30 to 4:30. Four credits. Sluss and Garver.

50.—MACHINE DESIGN. Analytical and graphical solution of problems in the design of machine parts, transmission and hoisting devices. Junior, second semester. Monday and Wednesday, at 10:25, and Friday, 1:30 to 4:30. Four credits. Garver.

51.—THERMODYNAMICS. The relations between heat and mechanical energy; theory of heat engines. Must be preceded by physics 1 E and calculus. Text, Ennis's "Thermodynamics." Required of mechanical engineering students. Junior, first semester, at 10:25. Four credits. Sibley.

52.—HEAT ENGINE THEORY. A course for electrical engineering students, treating the science of thermodynamics more briefly than in the preceding course and including engine application. Junior, first semester, at 11:25. Three credits. Sluss.

53.—MECHANICS OF THE STEAM ENGINE. Course outlined in course 50 is followed through for a particular engine, together with the design of the engine parts. Required of electrical students, Junior, second semester, three hours, Tuesday and Thursday, at 10:25. Two credits. Sluss.

54.—HEATING AND VENTILATION. Laws of heat transfer; amount of air required for ventilation; methods and apparatus employed in modern buildings; central heating plants. Junior, second semester, two hours, at 9. Two credits. Garver.

55.—REFRIGERATION. Principles of mechanical refrigeration. Ice manufacturing and cold storage plants from the standpoint of American practice. Recitations, designing room work, and laboratory exercises with ammonia machine. Optional, first semester, Monday, Wednesday and Friday, at 9. Three credits. Sluss.

56.—STEAM ENGINE DESIGN. Valve motions, governors, inertia forces and flywheels, balancing, simple and compound engines, engine details. Senior, first semester, Tuesday and Thursday, 8 to 10. Outside preparations required. Two credits. Sibley.

57.—STEAM-TURBINE DESIGN. Calculation and design of nozzles and blading of impulse and reaction types of turbines. Structural design. Senior, second semester, two hours class, (a), Monday and Wednesday, at 11:25, and four hours designing, Monday, 1:30 to 5:30. Three credits. Sibley.

58.—GAS-ENGINE DESIGN I. General theory and practice of gas-engine design and construction. Text, Lucke's "Gas-engine Design." Senior, first semester, one hour class, Monday and Tuesday, at 1:30, Wednesday and Thursday of alternate weeks, 1:30 to 4:30. Three credits. Sibley.

59.—GAS-ENGINE DESIGN II. Application of principles covered in course I to design of special types of gas engines. Senior optional, second semester, by appointment. Three credits. Sibley.

60.—HYDRAULIC DESIGN. Waterpower development. Rainfall and run-off; stream flow; preliminary plant layout; selection of standard water turbines; turbine design. Senior optional, first semester, Wednesday, at 11:25, and Friday, 10:30 to 12:15. Three credits. Walker.

61.—STRUCTURAL DESIGN. Stresses in the frames of steel buildings, and design of the members of the structure. Optional for Seniors specializing in mill engineering. First semester, Monday, Wednesday and Friday, at 9. Three credits. Sibley.

62.—INDUSTRIAL PLANT DESIGN. Planning of manufacturing plants; location, transportation; routing of work; handling material. Senior optional, second semester, Wednesday and Friday, at 9, designing room three hours by appointment. Three credits Walker.

64.—MECHANICAL LABORATORY. Theory and use of planimeters; calibration of apparatus; cement testing; valve setting; coal calorimetry; physical properties of lubricating oils. First semester, three hours, Tuesday or Thursday, 1:30 to 4:30. One credit. Sluss, Garver.

65.—HEAT ENGINE LABORATORY. Experimental engineering methods; engineering literature bearing upon power development; laboratory tests of steam and gas prime movers, compressors, refrigerating units, etc. Drill in report writing. Must be preceded by thermodynamics. Senior, first semester, for electrical students, Tuesday or Thursday, 1:30 to 5:30. Second semester, for mechanical students, Wednesday, 1:30 to 5:30. One lecture per week and report writing outside of laboratory time. Two credits. Walker, Sluss, Garver.

67.—THESIS. Senior, both semesters, Friday, 1:30 to 4:30. Three credits. Sibley and Sluss.

68.—SUMMER VACATION WORK. Two months to be spent in regular work in some shop or manufacturing plant of good standing. A report on this work, with a certified statement from the shop foreman or the superintendent, must be presented before credit can be given.

69.—SHOP ADMINISTRATION. Study of methods of routing and following up work in the shop; time study of machine processes; practice in instruction-card writing. Lecture on Friday at 8, and practice work by appointment. Junior, second semester. Two credits. Walker, Garver.

70.—WORKS MANAGEMENT. Modern industrial plant organization; principles of cost accounting; labor wage systems; distribution of indirect expense; power economics. Lectures, problems, and assigned reading. Senior, second semester. Two credits. Walker.

For courses open to graduate students, see Graduate School.

MECHANICS.

Associate Professor H. A. RICE.
Associate Professor HOOD.
Assistant Professor GARDNER.
Assistant Professor SLUSS.
Assistant Professor STRADLING.
Mr. J. O. JONES, Instructor.

50.—MECHANICS. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Required of all engineering students. Junior, both semesters, five hours, at 8 or 9. Five credits. H. A. Rice, Hood, and Gardner.

51.—STRENGTH OF MATERIALS. The theory of resistance to stress and application to engineering construction. Required of all engineering students. Junior, both semesters, four hours, at 8 or 10:25. Four credits. H. A. Rice, Gardner, Sluss, and Stradling.

52.—TESTING OF MATERIALS. A laboratory course to accompany course 51. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Junior, second semester, four hours, Monday, Wednesday, Thursday, or Friday afternoon, or Saturday morning. One credit. Sluss and J. O. Jones.

METALLURGY.

Associate Professor WHITAKER.

57.—ASSAYING AND METALLURGICAL ANALYSIS. The first half of the semester is devoted to the fire assay of gold, silver, and other metals; the second half to the volumetric assay of ores and furnace products. Junior mining engineering students are required to take the entire course, and receive five credits; the Senior chemical engineering students are required to take fire assaying the first half of the semester, and will receive two and one-half credits. Second semester, five or ten hours, two afternoons per week. Two and one-half or five credits. Whitaker.

61E.—METALLURGY I. General metallurgy and metallurgy of iron and steel. Lecture and recitations. Must be preceded by chemistry 3. Required of Junior mechanical engineering students and Senior chemical engineering students. First semester, three hours, at 9. Three credits. Whitaker.

62E.—METALLURGY II. Metallurgy of lead, zinc, and copper, followed by that of silver, gold, mercury, and tin. Prerequisite, chemistry 3. Required of Senior mining and chemical engineering students. Second semester, three hours, at 9. Three credits. Whitaker.

63.—METALLURGICAL LABORATORY. Pyrometric and calorimetric measurements, preparation of silicates and alloys, oxidation and reduction reactions, amalgamation, chlorination, cyaniding and leaching, etc. Optional for Juniors, Seniors, and graduate students who have taken or are taking metallurgy 61 or 62. Either semester, two hours, by appointment. Whitaker.

64E.—GENERAL METALLURGY. A repetition in briefer form of course 61E. Required of Senior mining engineering students, second semester, two hours, at 9. Two credits. Whitaker.

MINERALOGY.

Professor HAWORTH.
Assistant Professor TODD.

1E.—ELEMENTARY MINERALOGY I. A brief course in crystallography, blowpipe analysis, and systematic mineralogy, consisting of lectures and laboratory work. Sophomore, second semester, five hours, 3:30 to 5:30. Five credits. Todd.

62E.—PETROGRAPHY. This course includes a study of the mineralogical and chemical composition of rocks, their origin,

structural features and classification. Second semester. Five credits, Haworth.

Other courses in mineralogy are open to engineering students as optionals. For these, see The College.

MINING ENGINEERING.

Professor HAWORTH.

Associate Professor C. M. YOUNG.

Associate Professor HUMBLE.

50.—MINING. Underground surveying, to be supplemented by field work. Excavation for mining purposes, quarrying, boring for gas, oil, and water. Manufacture and use of explosives. Sinking of shafts, tunneling, support of underground excavations. Lectures and recitations. Junior, first semester, five hours, at 11:25. Five credits. C. M. Young.

51.—ORE DRESSING. Methods used for the separation and concentration of valuable minerals. Recitations, lectures, and laboratory work. Richard's "Text Book of Ore Dressing." Senior, first semester, three hours, at 9, (three credits); second semester, three hours, at 10:25, (three credits). C. M. Young.

52.—POWER, EXTRACTION, DRAINAGE, VENTILATION. Steam, compressed air, and electricity as applied to mining; mining hydraulics and the drainage of mines; handling of ore underground and on the surface; ventilation; mine accidents. Includes a visit to the lead-zinc district of Kansas and Missouri and a report. Senior, first semester, five hours, at 10:25. Five credits. C. M. Young.

53.—SAMPLING AND EXPLOITATION. Methods of sampling, developing, and working mineral deposits, including studies of important mining districts. Senior, second semester, (a), five hours, at 11:25. Two and one-half credits. C. M. Young.

54.—MINE PLANT. Equipment necessary for the exploitation of mineral deposits and of important examples; building materials, foundations, mine buildings; the design of mine plants. Optional for students of mining engineering. Senior, second semester, five hours, at 9. Five credits. C. M. Young.

55.—MINE ADMINISTRATION. Mine accounts and management; care of sick and injured in case of accident; rules and regulations for equipping expeditions and maintaining camps. Optional for mining engineering students. Senior, first semester, (a), five hours, by appointment. Two and one-half credits. C. M. Young.

56.—COAL MINING. Methods of working coal beds and of handling coal. Properties of mine gases, safety lamp; explosives; ventilation; cause and prevention of explosions. May be substituted for mining 52. Open to students not enrolled in the course in mining engineering. Second semester, five hours, at 9. Five credits. C. M. Young.

57.—MINING LAW. Outline of the laws relating to the mining industries. Recitations and lectures. Second semester, one hour, in alternate years. (Not given in 1913-'14.) Humble.

58.—PROFESSIONAL THESIS. This may be an elaborate description of a mining or metallurgical plant or of a mining district, or may be founded upon research work done at the University.

59.—SUMMER WORK. Each candidate for a degree is required to give evidence of having had experience in some phase of mining work. This may be gained by an investigation of some mining district under the direction of an instructor for a period of six weeks, or by employment in mining work.

60.—MINING DRAWING. Drawing and coloring mine maps and mine sections. Use of symbols to show nature of geological structure. Coal-mine maps. Sophomore, second semester, three hours. One credit. C. M. Young.

PHYSICAL EDUCATION.

Professor NAISMITH.
Mr. ROOT, Instructor.

The aim of the work is mainly hygienic and recreative. In accomplishing this the future work of the engineer will be kept in mind, and the kind of work used will tend to develop the qualities needed in the life of an engineer, such as balancing, climbing ropes and ladders, transporting objects over difficult places, swimming, and some of the combative sports.

Special classes will be organized for engineers at such times as the majority can attend. Attendance will be required three hours per week.

Those specially qualified may substitute such games as are conducted by coaches, during the season in which they are played.

PHYSICS.

Professor KESTER.
Associate Professor M. E. RICE.
Assistant Professor STIMPSON.
Mr. T. T. SMITH, Instructor.
Mr. R. K. YOUNG, Instructor.

1E.—GENERAL PHYSICS. A fundamental course of experimental lectures, recitations, and problems. Prerequisites, plane trigonometry and some knowledge of analytical geometry and calculus. Sophomore, first semester; lectures and recitations on Monday, Tuesday, Wednesday, and Thursday, at 11:25; laboratory two hours, Tuesday or Thursday, at 8 to 10, or Monday, 1:30 to 3:30. Given also in the second semester; lectures and recitations on Monday, Tuesday, Wednesday, and Thursday, at 10:25; laboratory two hours, Wednesday or Friday, 1:30 to 3:30. Five credits. M. E. Rice, Kester, Stimpson, T. T. Smith, and R. K. Young.

2E.—GENERAL PHYSICS. A continuation of course 3. Sophomore, second semester, lectures and recitations on Monday, Tuesday, Wednesday, and Thursday, at 11:25; laboratory two hours, Monday, Wednesday, or Friday, 8 to 10, or Monday, 1:30 to

3:30. Given also in the first semester; lectures and recitations on Monday, Tuesday, Wednesday, and Thursday, at 10:25; laboratory two hours, Wednesday or Friday, 1:30 to 3:30. Five credits. M. E. Rice, Kester, Stimpson, T. T. Smith, and R. K. Young.

52.—THEORY OF ELECTRICITY AND MAGNETISM. Junior, first semester, three hours, at 9. Three credits. M. E. Rice.

60E.—ELECTRICAL MEASUREMENTS I. A laboratory course coordinate with 52. First semester, three hours per week, by appointment. One and a half credits. M. E. Rice.

61E.—ELECTRICAL MEASUREMENTS II. Continuation of course 60E. Second semester, three hours, by appointment. One and one-half credits. M. E. Rice.

For other courses in physics, see The College and The Graduate School.

ROMANCE LANGUAGES.

Professor GALLOO.

Assistant Professor WINTER.

Miss MAY GARDNER, Instructor.

French.

1.—ELEMENTARY FRENCH I. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation, accidence, and easy syntax. Open to students who have had three years of Latin or German. First semester, five hours, at 10:15. Five credits. Miss Gardner.

Students who have had less than two years of a foreign language form a distinct section, meeting at 8.

2.—ELEMENTARY FRENCH II. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Second semester, five hours, at 10:25. Five credits. Miss Gardner.

For advanced courses in French, see The College.

Spanish.

1.—ELEMENTARY SPANISH I. An outline of grammar (Hills and Ford). Reading of short stories. Elementary composition. Open to students who have had three years of Latin, French, or German. First semester, five hours, at 9, 11:25, or 1:30. Also second semester, five hours, at 2:30. Five credits. Winter and Miss Gardner.

Students who have had less than two years of a foreign language form a distinct section, reciting during the first semester at 1:30.

2.—ELEMENTARY SPANISH II. Grammar and composition. Reading of easy modern prose. Carrión-Aza, Pérez Galdós, Palacio Valdés, etc. Second semester, five hours, at 9, 11:25, or 1:30. Five credits. Winter and Miss Gardner.

For advanced courses in Spanish, see The College.

SHOP WORK.

Assistant Professor F. E. WARD.
Assistant Professor F. E. JONES.
Mr. WILTFONG, Instructor.
Mr. LANDRUM, Instructor.
Mr. ROCKLUND, Instructor.

SHOP I.—ELEMENTARY FORGING AND LIGHT BENCH WORK. Building a fire; composition and properties of iron and mild steel; pointing, bending and light welding. Forging and tempering carbon-steel hand tools. Riveting and cutting threads. Three hours per week, one credit. Wiltfong.

SHOP II.—ELEMENTAL WOODWORKING AND MOLDING. A short comprehensive course in beginning shop work, comprising studies in the selection, care and use of the hand tools for woodwork. The fundamentals of joinery and wood turning are worked out in a series of definitely planned exercises. Optionals in elementary furniture making are given to those who demonstrate a satisfactory amount of skill. A fraction of the time allowed for this course is given to molding and elemental foundry practice. Three hours per week, each semester, one credit. F. E. Jones and Landrum.

SHOP III.—PATTERN MAKING AND FOUNDRY. The theory and practice of wood pattern making are studied and discussed in short lecture-recitations. The principles of pattern construction, such as draft, shrinkage, fillet, core prints, core boxes, etc., are applied in a practical way by the students making patterns for actual use in the foundry. The foundry work consists of lectures and discussions on materials, methods of molding and core making, care and management of the cupola furnace, metallurgy of foundry irons, the brass furnace, melting and casting nonferrous alloys, etc., and practice work in the same lines. Each squad of students is required to have entire charge of the melting and casting of a heat of iron at least once during the course. Three hours per week, first semester, one credit. F. E. Jones and Rocklund.

SHOP IV.—ADVANCED FORGING, FILING AND BENCH WORK. Heavy welding, forging lathe tools and pliers; tempering and case-hardening. Exercises in bench work in drilling and polishing. Three hours per week, one credit. Ward and Wiltfong.

SHOP V.—LATHE WORK. The use and testing of tools made in shop IV. Centering work, turning on centers to fit standard gauges, turning tapers and curved surfaces, turning shafting, cutting threads, making cap screws. Three hours per week, one credit. Ward.

SHOP VI.—ADVANCED LATHE AND MACHINE-TOOL WORK. Making close fits with ordinary calipers; cutting special screws and inside threading; machining and boring castings with high-speed tools, from blue prints and drawings. Three hours per week, one credit. Ward.

SHOP VII.—TOOL MAKING AND ASSEMBLING. Making gears, taps, reamers and mandrels; tempering and grinding hardened

work; erecting and laying out work from drawings. Three hours per week, one credit. Ward.

SUMMER SHOP PRACTICE. Four weeks of 44 hours per week. The work is the same as that covered by shop IV, shop V, shop VI and shop VII, beginning for each student at the point where his preceding work terminated. Required of mechanical and electrical students at the end of the Sophomore year.

TECHNICAL REPORTS AND THESES.

Special written reports are required from each student at certain times during his course of study, generally one in each semester of the Sophomore year, one in the Junior year, and one in the Senior year. A student enrolled for Technical Report I, II, III or IV confers with his instructor for assignment of the subject on or before October 15 for the first semester, and on or before March 15 for the second semester. The finished reports must be in the instructors' hands by January 15 and May 15 of the respective semesters. Each report counts for one-half credit.

A special thesis is required of each student before his graduation. See "Thesis" in the description of courses of the professional departments.

Standard forms for the make-up of technical reports, theses, and other written papers are specified in an official circular to be had at the Dean's office.

ENGINEERING LECTURES.

A course of special lectures is given to the Freshmen during the first semester by members of the Engineering Faculty. The purpose of the lectures is twofold: first, to give the student a more adequate idea of engineering as a profession and in its relation to the economic and industrial world; second, to enable those students who have not decided upon the courses of study to be pursued to gain a more definite conception of the field covered in each, and the requirements for success.

In connection with each professional course of study there is regularly maintained a journal meeting for the review of current engineering literature, or a society for the discussion of engineering topics. These societies are described more fully among the "University Organizations," page 46. Through the efforts of these societies and of the members of the Engineering Faculty a large number of lectures by practicing engineers are secured during the year.

SUMMER WORK.

In several of the courses of study practical work in one or two summers is required. This work is not measured in terms of credit hours, although in fixing the requirements for graduation one or two additional credit hours are required in those courses of study which do not include summer work.

INSPECTION TRIPS.

As a valuable adjunct to resident study at the University, inspection trips to various engineering works are required to be taken by students with their instructors. Such trips may be made to large machine shops, power plants, steam or electric railways, lighting systems, city waterworks, sewerage systems, industrial chemical plants, cement works, mining plants, or smelters. These trips may be made during regular sessions of the school or during vacation. Parties sometimes travel as far as Chicago or St. Louis. The trips requiring absence from other work and those of considerable expense are indicated in the schedules of required work.

THE SCHOOL OF FINE ARTS.

FACULTY.

- FRANK STRONG, A. B., 1884, A. M., 1893, PH. D., President.
WILLIAM HERBERT CARRUTH, PH. D., Vice President, and Professor of Germanic Languages and Literatures.
CHARLES SANFORD SKILTON, A. B., Dean, and Professor of Musical Theory and Organ.
CARL ADOLPH PREYER, MUS. D., Professor of Piano, Counterpoint, Canon, and Fugue.
CHARLES EDWARD HUBACH, Professor of Voice.
WILLIAM ALEXANDER GRIFFITH, Professor of Drawing and Painting.
ALEXANDER MARTIN WILCOX, PH. D., Professor of Greek Language and Literature.
CHARLES GRAHAM DUNLAP, LITT. D., Professor of English Literature.
EDWIN MORTIMER HOPKINS, PH. D., Professor of Rhetoric and English Language.
EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
JAMES NAISMITH, M. D., Professor of Physical Education.
FREDERICK EDWARD KESTER, PH. D., Professor of Physics.
RAPHAEL DORMAN O'LEARY, A. B., Associate Professor of Rhetoric.
ELMER FRANKLIN ENGEL, A. M., Associate Professor of German.
SELDEN LINCOLN WHITCOMB, A. M., Associate Professor of English Literature.
ALBERTA LINTON CORBIN, PH. D., Associate Professor of German.
HARRIET GREISSINGER, MUS. B., Assistant Professor of Piano.
MAUDE BEATRICE COOKE, Assistant Professor of Piano.
WORT S. MORSE, B. S., Instructor in Violin.
MAUD MILLER, MUS. B., Instructor in Piano.
ANNA L. SWEENEY, MUS. B., Instructor in Piano.
OLIVIA OLSSON, Instructor in Voice and School Music.

DEPARTMENTS, DEGREES, AND REQUIREMENTS.

DEPARTMENTS.

The School of Fine Arts is made up of the following departments: (1) Music. (2) Drawing and Painting.

DEGREES.

The courses of study in the School of Fine Arts lead to the following degrees and certificates:

Bachelor of music.

Bachelor of painting.

Teacher's certificate of completion of two-year courses in music or drawing and painting.

The degree of Master of Music is granted by the Graduate School.

REQUIREMENTS FOR ADMISSION.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

1. BY EXAMINATION.

All students who can not present certificates from accredited schools will be examined in the subjects required for entrance. The times and place of examination are set forth in the General Catalogue.

2. BY CERTIFICATE.

Students will be admitted without examination on certificates from accredited high schools or other preparatory schools, signed by the proper school officer.

UNITS REQUIRED FOR ADMISSION.

For admission to courses in drawing and painting, and in voice, the requirements are the same as for admission to The College, viz.: fifteen units of high-school work.

For admission to the courses in violin and in piano and organ, twelve units of high-school work are required, and in addition candidates must satisfy the requirements noted under "Additional Requirements." The twelve units must include the following:

Three units in English.

Two and one-half units in mathematics.

Three units in foreign language.

One unit in physical science.

Two and one-half optional units.

ADDITIONAL REQUIREMENTS.

IN VIOLIN. To the general requirements stated above applicants must add an ability to play correctly selections from the Wichtl School, book I, and from Kayser, Thirty-six Studies, book I.

IN PIANO AND ORGAN. The following course, intended to parallel the four years of high-school study, must be completed before admission to the Freshman year. Students who have nearly completed the course will be admitted with condition on recommendation of the head of the department. An examination in fourth year work is required. While the School of Fine Arts prefers this course of study, students who have been prepared with Lambert's or Mathews' Graded Studies, Mason's Touch and Technic, or other recognized methods, may offer them as a substitute.

FIRST YEAR—

STUDIES.

Loeschhorn, Op. 65, Books I and II.
Burgmuller, Op. 100.
Koehler, Op. 50.
Duvernoy, Op. 276.

PIECES.

Selections from "The Pianist's First and Second Years" (Schirmer), and pieces by Biedermann, Dennee, Bohm, and others.

SECOND YEAR—

Loeschhorn, Op. 65, Book III.
Heller, Op. 47.
Lemoine, Op. 37.
Concone, Op. 24.

Selections from "The Pianist's First and Second Years" (Schirmer), and pieces by Gurlitt, Lichner, Von Wilm, and others.

THIRD YEAR—

Loeschhorn, Op. 66, Book I.
Heller, Op. 47.
Czerny, Op. 849.
E. B. Perry, Wrist Studies.
"Five Lyrical Pieces."

Selections from "The Pianist's Second and Third Years" (Schirmer), and pieces by Reinecke, Merkel, Schytte, and others. Sonatinas of Clementi, Kuhlau, Beethoven, Op. 49.

FOURTH YEAR—

Loeschhorn, Op. 66, Books II and III.
Heller, Op. 46.
Czerny, Op. 299, Books I and II.
Preyer, Twelve Wrist Studies.

Haydn Sonatas in C major or E minor;
Mozart Sonatas in C major or G minor;
Beethoven, Op. 79; Grieg, Lyrical Pieces, Op. 12; Schumann, Album for the Young; pieces by Meyer-Helmund, Jensen, Dupont, and others.

IN VOICE AND VIOLIN. Applicants for the regular course in voice and violin must be able to play piano accompaniments of moderate difficulty. Any deficiency in this respect must be made up by private lessons before graduation.

SPECIAL STUDENTS.

Students need not be deterred from seeking to enter the School of Fine Arts of the University because they can not satisfy all the requirements for full admission to that school. Those requirements are for persons who are candidates for a degree in music or painting. All persons who desire to pursue a special line of work, without conforming to the requirements for en-

trance, or following a prescribed course, may apply for admission to the School of Fine Arts as special students. The admission of such persons is under the control of the Dean, to whom they should apply, and whose certificate of acceptance must be presented to the Registrar before registration. Special students are expected to take the equivalent of twelve hours' work, including theory, excepting those of mature years who reside in Lawrence, and students in other schools.

Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired. Special students are subject to the same regulations as regular students as to quality of work, attendance at recitations, and examinations, if they desire credit toward a degree.

ENSEMBLE PLAYING.

An ensemble class meets for the study of concerted music. Four- and eight-hand piano music is studied, and trios are played with violin and violoncello. Thus pupils become acquainted with many masterpieces which are often inaccessible to music students, and acquire habits of sight-reading and accompanying, which are invaluable to the musician. Advanced students also have the opportunity of playing concertos with the University orchestra.

THE NORMAL CLASS.

Attendance at the normal class is required of Sophomores in the piano department. The first semester the leading methods of piano instruction are examined and practically demonstrated. The second semester the voice, organ and orchestra are examined, and especial attention is given to sight singing. During both semesters there is practice in writing melodies from dictation.

GENERAL.

It is required of all candidates for a degree that the last two years be spent in residence at the University.

During the first two years piano students will take their lessons from an assistant and one lesson a month from the head of the department. In the third and fourth years all piano lessons are with Professor Preyer, but no student will be admitted who has not completed the work of the preceding year. Students in the artists' course receive two lessons a week; students in the collegiate course may choose between one private lesson or two lessons in classes of four.

Students who are behind in piano at the end of the second year will have to become special students in piano until the work is made up before they take any of the studies of the third year.

Voice students in the regular course take their lessons with Professor Hubach.

Violin students are required to play in the University orchestra during their entire course, unless excused by the Dean on recommendation of the instructor.

The year is divided into four quarters, two quarters in each term.

The school does not furnish pianos for practice at the building, except a piano with organ pedals, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private persons, or in connection with board, may often be secured at even lower rates. Several students sometimes unite in renting an instrument, thus materially reducing the expense.

Students in drawing and painting will be required to furnish their own materials, except easels and drawing boards.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

EQUIPMENT.

IN MUSIC. The department of music of the University occupies a building of its own—North College. The school is well equipped with pianos—Knabe concert grands exclusively are used; a three-manual pipe organ, built by King & Sons, Elmira, N. Y.; a piano with organ pedals; charts for sight-reading, and a Victor gramophone with musical records.

IN DRAWING AND PAINTING. The department of drawing and painting offers instruction in free-hand drawing in charcoal, pencil, and pen and ink; painting in oil and water colors from still life, the living model, the landscape; ornamental design, perspective, pictorial composition, and ceramics. In the fall of 1911 the studios of the department of drawing and painting were moved to the rooms constructed for the use of this department in the new Administration building. There are six large, top-lighted studios, together with storerooms, locker rooms and toilet rooms. The department is well equipped with objects used in teaching drawing and design, together with a large library.

THE LIBRARY. The University library contains a good collection of works on art, including art exposition and criticism, musical history, vocal and orchestral scores of operas, symphonies, chamber music, oratorios and cantatas, pianoforte and organ music, and collections of standard merit. This collection is annually increased.

CONCERTS AND RECITALS.

Concerts are frequently given in Recital Hall and in University Hall by the Faculty and advanced students. Concert courses which are arranged for at the University, and the nearness of Lawrence to Kansas City and Topeka, afford students an opportunity to hear many noted musicians.

Recitals are given fortnightly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and their friends. Every student is required to attend these recitals and all concerts, and take part in the programs at least twice a year, and to present

each term a record of attendance. These semipublic appearances are of great assistance in enabling the student to acquire the ease and self-possession so essential to a successful public performance.

Towards the end of the academic year a music festival of two days' duration is given, in which a leading orchestra and noted soloists take part with the Festival Chorus, and several masterpieces of choral and orchestral music are rendered.

ART EXHIBITIONS.

An annual exhibition of works of art is held at the University, together with a course of lectures upon subjects related to the fine arts. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

EXPENSES.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Fine Arts. Nonresidents of Kansas must pay a matriculation fee of ten dollars.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses; and the remainder must be paid for at rates indicated below.

All bills are payable quarterly in advance.

No fees will be refunded if the student leaves before the end of a half-term. The receipt of the treasurer of the School of Fine Arts must be presented each quarter to secure enrollment for private lessons. No lessons are given during the week of the semiannual examinations.

Seniors of the music department, except in the piano artists' course, pay \$1 per quarter concert fee.

Rates for regular students (two half-hour lessons a week):

First year*...	Piano, per quarter, lessons with assistants,	\$27.50
	Voice, per quarter	31.00
	Violin, per quarter	25.00
	Drawing and painting, per quarter.....	15.00
Second year...	Rates the same as for first year.	
Third year...	Piano, per quarter:	
	Artists' course	44.50
	Collegiate course	26.50
	Organ, per quarter	33.50
	Voice, per quarter	33.50
	Violin, per quarter	31.00
	Drawing and painting, per quarter.....	15.00
Fourth year...	Collegiate course free to Kansas students.	
	For nonresidents, the same as for the third year.	
	Artists' course	\$16.00
	For nonresidents, the same as for the third year.	

* First year music students who enter the second semester pay \$2.50 a quarter additional as long as they attend the three-hour harmony class.

RATES FOR SPECIAL STUDENTS.

Preliminary years and private lessons with assistants:

Piano, two lessons a week, per quarter... \$17.00 and \$21.00

" one lesson a week, per quarter... 9.00 and 11.00

Technic (in class) 5.00

Teaching materials 5.00

Voice, two lessons a week, per quarter..... 19.00

" one lesson a week, per quarter..... 11.00

Lessons with heads of departments (half-hour lessons):

Piano, two lessons a week, per quarter..... 36.00

" one lesson a week, per quarter..... 20.00

Voice, two lessons a week, per quarter..... 28.00

" one lesson a week, per quarter..... 16.00

Organ, two lessons a week, per quarter..... 28.00

" one lesson a week, per quarter..... 16.00

Violin, two lessons a week, per quarter..... 25.00

" one lesson a week, per quarter..... 13.00

Lessons with heads of departments (half-hour lessons):

Harmony, counterpoint, composition, instrumentation—

Per quarter 28.00

In class 10.00

* Public-school music, two lessons a week in class, per quarter 5.00

Sight singing, two lessons a week in class, per quarter, 5.00

Ear training, two lessons a week in class, per quarter, 5.00

Painting, in class, per quarter..... 15.00

Drawing, one lesson a week, eighteen weeks..... 7.50

NECESSARY LIVING EXPENSES (ESTIMATED).

Board, \$3.50 to \$4 a week.

Room (for one), 75 cents to \$2 a week.

Piano rent, \$3 to \$5 a month.

Laundry, \$10 and up, each year.

Books and music, \$10 to \$40 a year.

* In 1913-'14 the fee for the public-school music will be \$20 per quarter for the regular course, exclusive of private voice lessons.

PROGRAM OF STUDIES.

PIANOFORTE.

Leading to the Degree of Bachelor of Music.

ARTISTS' COURSE—COLLEGIATE COURSE.

These courses are identical in outline, but students in the artists' course are expected to do a larger amount of work, to maintain the highest grade in all musical subjects, and give a graduating recital. This is not required in the collegiate course, which is intended for those who wish to fit themselves for teachers or take music for personal culture rather than to become public performers. After the second year students are graded in the two courses according to their standing. Advanced students in French, German and Italian are allowed to substitute advanced courses for those offered below. See also paragraph "General" on page 265.

FRESHMAN YEAR.

First Semester:

Piano 1, twice a week, by appointment. Assistants.

Once a month by appointment. Preyer.

Technic (Piano 9), once a week, by appointment. Miller.

Harmony (Musical Theory 1), Tuesday and Thursday, at 2. Skilton.

Rhetoric 1, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.

Physical Education 1, twice a week, by appointment. Johnson.

History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 1.

Second Semester:

Piano 2, twice a week, by appointment. Assistants.

Once a month by appointment. Preyer.

Technic (Piano 10), Wednesday, at 3. Miller.

Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.

Harmony (Musical Theory 1), Monday, Wednesday, and Friday, at 2. Skilton.

Rhetoric 2, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.

Physical Education 2, twice a week, by appointment. Johnson.

History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 2.

SOPHOMORE YEAR.

First Semester:

- Piano 3, twice a week, by appointment. Assistants.
 Once a month by appointment. Preyer.
 Technic (Piano 11), once a week, by appointment. Miller.
 Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
 Harmony (Musical Theory 2 and 3), Monday, Wednesday and Friday, at 2. Skilton.
 English 10, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.
 Normal Class, Wednesday, at 4. Skilton.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Ensemble Playing 3.
 One of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. Hubach or Olsson.
 Free-hand Drawing. Griffith.
 German 1, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30. Engel and assistants.
 French 1, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, Ward, Winter, Cowper, and assistants.
 Italian 1, three hours, at 11:15. Ward.
 Spanish 1, five hours, at 9, 11:15, or 1:30. Owen, and assistants.

Second Semester:

- Piano 4, twice a week, by appointment. Assistants.
 Once a month by appointment. Preyer.
 Technic (Piano 12), once a week, by appointment. Miller.
 Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.
 English 11, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.
 Normal Class, Wednesday, at 4. Skilton.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Ensemble Playing 4.
 One of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1, by appointment. Hubach or Olsson.
 Free-hand Drawing. Griffith.
 German 2, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30. Engel and Corbin.
 French 2, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, and assistants.
 Italian 2, three hours, at 11:15. Ward.
 Spanish 2, five hours, at 9 or 1:30. Winter, and assistants.
 Teaching Materials, once a week, by appointment. Greisinger.

JUNIOR YEAR.

First Semester:

Piano 5, twice a week, by appointment. Professor Preyer.
Counterpoint (Musical Theory 5), Monday, at 3. Preyer.
Composition (Musical Theory 7), Thursday, at 3. Skilton.
History of Music, Thursday, at 4. Skilton.
English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8, 9, 10:15, and 1:30.
Two-hour divisions at 10:15 and 11:15. Gray, and assistants.
Recitals 5.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture, by appointment. Hubach or Olsson.
Drawing and Painting. Griffith.
German 1 or 3, daily. Engel and Corbin.
French 1 or 3, daily. NeuenSchwander, and assistants.
Italian and Spanish as in Sophomore year.

Second Semester:

Piano 6, twice a week, by appointment. Preyer.
History of Music, Thursday, at 4. Skilton.
Counterpoint (Musical Theory 5), Monday, at 3. Preyer.
Composition (Musical Theory 8), Thursday, at 3. Skilton.
English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:15 and 11:15.
Two-hour divisions at 8, 9, 10:15 and 1:30. Gray, and assistants.
Acoustics, Monday and Wednesday, at 4:30, third half term. Stimpson.
Recitals 6.
Thesis 1. Skilton.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture, by appointment. Hubach or Olsson.
Drawing and Painting. Griffith.
German 2 or 4, daily. Engel and Corbin.
French 2 or 4, daily. NeuenSchwander and Ward.
Italian and Spanish as in Sophomore year.
Teaching Materials, once a week, by appointment. Greisinger.

SENIOR YEAR.

First Semester:

Piano 7, twice a week, by appointment. Preyer.

Canon and Fugue (Musical Theory 11), once a week, by appointment. Preyer.

Recitals 7.

Thesis 2. Skilton.

Optional, English 50, 76, and 78. Other optionals as in previous years.

Composition (Musical Theory 9), once a week, by appointment. Preyer.

Second Semester:

Piano 8, twice a week, by appointment. Preyer.

Instrumentation (Musical Theory 12), once a week, Wednesday, at 3. Skilton.

Thesis 3. Skilton.

Recitals 8.

Optional, English 77, 78, and 87. Other optionals as in previous years.

Composition (Musical Theory 10), once a week, by appointment. Preyer.

-Teaching Materials, once a week, by appointment. Greisinger.

ORGAN.

Leading to the Degree of Bachelor of Music.

Three-year course, open to those who have completed the work of the Freshman year in piano.

SOPHOMORE YEAR.

First Semester:

Organ 1, once a week, by appointment. Skilton.

Piano 3, once a week, by appointment. Assistant.

Technic (Piano 11), once a week, by appointment. Miller.

Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.

English 10, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.

Normal Class, Wednesday, at 4. Skilton.

History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 3.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. Hubach or Olsson.

Free-hand Drawing. Griffith.

German 1, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30. Engel, and assistants.

French 1, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, Ward, Winter, Cowper, and assistants.

Italian 1, three hours, at 1:30. Ward.

Spanish 1, five hours, at 9, 11:15, or 1:30. Owen, and assistants.

Second Semester:

Organ 2, once a week, by appointment. Skilton.

Piano 4, once a week, by appointment. Assistant.

Technic (Piano 12), once a week, by appointment. Miller.

Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.

English 11, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.

Normal Class, Wednesday, at 4. Skilton.

History of Music, Thursday, at 4. Skilton.

Recitals and Ensemble Playing 4.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture, by appointment. Hubach or Olsson.

Free-hand Drawing. Griffith.

German 2, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30. Engel and Corbin.

French 2, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, and assistants.

Italian 2, three hours, at 1:30. Ward.

Spanish 2, five hours, at 9 or 1:30. Winter, and assistants.

JUNIOR YEAR.

First Semester:

Organ 3, twice a week, by appointment. Skilton.
 Composition (Musical Theory 7), Thursday, at 3. Skilton.
 Counterpoint (Musical Theory 5), Monday, at 3. Preyer.
 Organ 8, once a week, by appointment. Skilton.
 History of Music, Thursday, at 4. Skilton.
 English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8, 9, 10:15, and 1:30. Two-hour divisions at 10:15 and 11:15. Gray, and assistants.
 Recitals and Ensemble Playing 5.
 One of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1 or 2, by appointment. Hubach or Olsson.
 German 1 or 3, daily. Engel and Corbin.
 French 1 or 3, daily. NeuenSchwander, and assistants.
 Italian and Spanish as in Sophomore year.
 Drawing and Painting 1 or 2. Griffith.

Second Semester:

Organ 4, twice a week, by appointment. Skilton.
 Composition (Musical Theory 8), Thursday, at 3. Skilton.
 Counterpoint (Musical Theory 6), Monday, at 3. Preyer.
 Organ 9, once a week, by appointment. Skilton.
 English 13 *a* and *b*. History of English Literature. Two or three hours; three-hour divisions at 10:15 and 11:15; two-hour divisions at 8, 9, 10:15 and 1:30. Gray, and assistants.
 Acoustics, Monday and Wednesday, at 4:30, second half term. Stimpson.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Ensemble Playing 6.
 Thesis 1. Skilton.
 One of the following optionals may be taken (private lessons are subject to fees):
 Vocal Culture 1 or 2, by appointment. Hubach or Olsson.
 Drawing and Painting. Griffith.
 German 2 or 4, daily. Engel and Corbin.
 French 2 or 4, daily. NeuenSchwander.
 Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Organ 5, twice a week, by appointment. Skilton.
Canon and Fugue (Musical Theory 11), Wednesday, at 11.
Preyer.
Church Music 7, once a week. Skilton.
Recitals 7.
Thesis 2. Skilton.
Optional. English 50, 76, and 78. Other optionals as in previous years.
Composition (Musical Theory 9), once a week, by appointment. Preyer.

Second Semester:

Organ 6, twice a week, by appointment. Skilton.
Instrumentation (Musical Theory 12), Wednesday, at 3.
Skilton.
Recitals 8.
Thesis 3. Skilton.
Optional. English 77, 78, and 87. Other optionals as in previous years.
Composition (Musical Theory 10), once a week, by appointment. Preyer.

VIOLIN.

Leading to the Degree of Bachelor of Music.

These courses are the same as the four-year course in piano, except that violin 1 to 8 takes the place of piano 1 to 8, and orchestra 1 to 8 that of piano 9 to 12. Students must be able to play easy piano accompaniments or make up the deficiency by private lessons.

VOCAL CULTURE.

Leading to the Degree of Bachelor of Music.

FRESHMAN YEAR.

First Semester:

Vocal Culture 1, twice a week, by appointment. Hubach.

Harmony (Musical Theory 1), Tuesday and Thursday, at 2 Skilton.

Rhetoric 1, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.

Italian 1, three hours a week, at 11:15. Ward.

Physical Education 1, twice a week. Johnson.

History of Music, Thursday, at 4. Skilton.

Recitals and Chorus Singing 1.

Second Semester:

Vocal Culture 2, twice a week, by appointment. Hubach.

Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.

Rhetoric 2, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.

Physical Education 2, twice a week. Johnson.

History of Music, Thursday, at 4. Skilton.

Recitals and Chorus Singing 2.

Optional. Italian 2, three hours a week, at 11:15. Ward.

SOPHOMORE YEAR.

First Semester:

Vocal Culture 3, twice a week, by appointment. Hubach.

Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.

English 10, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.

Sight Singing 1, Wednesday, at 4. Olsson.

History of Music, Thursday, at 4. Skilton.

Recitals and Chorus Singing 3.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1, twice a week. Preyer or assistant.

Free-hand Drawing. Griffith.

German 1, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30. Engel, and assistants.

French 1, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, Ward, Winter, Cowper, and assistants.

Italian 1, three hours, at 11:15. Ward.

Spanish 1, five hours, at 9, 11:15, or 1:30. Owen, and assistants.

Second Semester:

Vocal Culture 4, twice a week, by appointment. Hubach.

Harmony (Musical Theory 4). Tuesday and Friday, at 3. Skilton.

English 11, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.

Sight Singing 2, Wednesday, at 4. Olsson.

History of Music, Thursday, at 4. Skilton.

Recitals and Chorus Singing 4.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1, twice a week, by appointment. Preyer or assistants.

Free-hand Drawing. Griffith.

German 2, daily, at 8, 9, 11:15, and 2:30. Engel and Corbin.

French 2, daily, at 8, 9, 10:15, 11:15, and 1:30. Neuen-Schwander, and assistants.

Italian 2, three hours, at 11:15. Ward.

Spanish 2, five hours, at 9 or 1:30. Winter, and assistants.

JUNIOR YEAR.

First Semester:

Vocal Culture 5, twice a week, by appointment. Hubach.
 Counterpoint (Musical Theory 5), Monday, at 3. Preyer.
 Composition (Musical Theory 7), Thursday, at 3. Skilton.
 History of Music, Thursday, at 4. Skilton.
 Recitals and Chorus Singing 5.

English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8, 9, 10:15 and 11:15. Two-hour divisions at 10:15 and 11:15. Gray, and assistants.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1 or 2, twice a week, by appointment. Preyer or assistants.

Drawing and Painting. Griffith.

German 1 or 3, daily. Engel and Corbin.

French 1 or 3, daily. NeuenSchwander, and assistants.

Italian and Spanish as in Sophomore year.

Second Semester:

Vocal Culture 6, twice a week, by appointment. Hubach.
 Counterpoint (Musical Theory 6), Monday, at 3. Preyer.
 Composition (Musical Theory 8), Thursday, at 3. Skilton.
 Acoustics, three hours a week, by appointment.
 Recitals and Chorus Singing 6.

History of Music, Thursday, at 4. Skilton.

English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:15 and 11:15. Two-hour divisions at 8, 9, 10:15, and 1:30. Gray, and assistants.

Thesis 1. Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1 or 2, twice a week, by appointment. Preyer or assistants.

Drawing and Painting. Griffith.

German 2 or 4, daily. Engel and Corbin.

French 2 or 4, daily. NeuenSchwander and Ward.

Italian and Spanish as in Sophomore year.

SENIOR YEAR.

First Semester:

Vocal Culture 7, twice a week, by appointment. Hubach.
Canon and Fugue (Musical Theory 11), Wednesday, at 11.
Preyer.
Recitals and Chorus Singing 7.
Thesis 2. Skilton.
Optional, English 50, 76, and 78. Other optionals as in previous years.
Composition (Musical Theory 9), once a week, by appointment. Preyer.

Second Semester:

Vocal Culture 8, twice a week, by appointment. Hubach.
Recitals and Chorus Singing 8.
Instrumentation (Musical Theory 12), Wednesday, at 3.
Skilton.
Opera, once a week. Hubach.
Thesis 3. Skilton.
Optional, English 77, 78, and 87. Other optionals as in previous years.
Composition (Musical Theory 9), by appointment. Preyer.

DRAWING AND PAINTING.

Leading to the Degree of Bachelor of Painting.

FRESHMAN YEAR.

First Semester:

Drawing 1, Monday, Wednesday, and Friday, 1:30 to 4:30.
Griffith and Benson.
English 10, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Johnson, and assistants.
Rhetoric 1, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.
Drawing 9 (Perspective), Tuesday and Thursday, at 11:15.
Griffith.
Drawing 10 (History of Modern Painting). Griffith.
Physical Education 1, twice a week. Johnson.

Second Semester:

Drawing 1, Monday, Wednesday, and Friday, at 1:30 to 4:30.
Griffith and Benson.
English 11, three hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30 and 3:30. Johnson, and assistants.
Rhetoric 2, two hours a week, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Gardner, and assistants.
Drawing 8 (Composition), Tuesday, at 11:15. Griffith.
Drawing 5 (Painting), daily, 1:30 to 4:30. Griffith.
Physical Education 2, twice a week. Johnson.

SOPHOMORE YEAR.

First Semester:

- Drawing 2, Monday, Wednesday, and Friday, 1:30 to 4:30. Griffith.
- Drawing 11 (Ornamental Design), Monday, Wednesday, and Friday, 10:15 to 12:15. Benson.
- English 12 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 8, 9, 10:15, and 11:15. Two hour divisions at 10:15 and 11:15. Gray, and assistants.
- Physical Education 50 (Mechanical Anatomy), three hours, 8 to 10. Naismith.
- Optional. French 1 and 2, German 1 and 2, Italian 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Manual Arts (Drawing and Design 4), Zoölogy 1.

Second Semester:

- Drawing 5, Monday, Wednesday, and Friday, 1:30 to 4:30. Griffith.
- Drawing 11, Monday, Wednesday, and Friday, 10:15. Benson.
- Drawing 8, Tuesday, at 11:15. Griffith.
- English 13 *a* and *b*. History of English Literature. Two or three hours. Three-hour divisions at 10:15 and 11:15. Two-hour divisions at 8, 9, 10:15 and 1:30. Gray, and assistants.
- Optional. French 1 and 2, German 1 and 2, Italian 1 and 2, Spanish 1 and 2, Philosophy 1 and 2, Botany 1.

JUNIOR YEAR.

First Semester:

- Drawing 7 (Painting), daily, 1:30 to 4:30. Griffith.
- Drawing 12 (Ornamental Design), Monday, Wednesday, and Friday, 8 to 10:15. Benson.
- Greek Architecture 61, two hours, at 11:15. Wilcox.
- English 50, Narration and Description. Three hours, first semester, at 8 and 9. O'Leary and Lynn.
- Optional. French 1 and 2 or 3 and 4, German 1 and 2 or 3 and 4, Spanish 1 and 2 or 3 and 4, Italian 1 and 2 or 3 and 4, English 71 and 72, Applied Design (Drawing and Design 7 and 8).

Second Semester:

- Drawing 6, daily, 1:30 to 4:30. Griffith.
- Drawing 12, Monday, Wednesday, and Friday, 8 to 10:15. Benson.
- Drawing 8, Tuesday, at 11:15.
- Greek Sculpture and Painting 62. Three hours, at 11:15. Wilcox.
- English 51, Narration and Description. Two hours, second semester, at 8 and 9. O'Leary and Lynn.
- Optional. Same as first semester.

SENIOR YEAR.

First Semester:

Drawing 7, daily, 1:30 to 4:30. Griffith.

Drawing 13 (History of Ornament), Tuesday and Thursday, at 10:15.

Optionals. Same as Junior year.

Second Semester:

Drawing 6, daily, 1:30 to 4:30. Griffith.

Drawing 13, Tuesday and Thursday, at 10:15.

Drawing 8, Tuesday, at 11:15.

Graduating Painting.

Optionals. Same as first semester.

SCHOOL MUSIC.

Leading to Teachers' Certificate in Music.

OLIVIA OLSSON.

It is the aim of the Department of School Music to prepare students as teachers and supervisors of music in elementary and high schools. The normal work in this department is supplemented by courses in the School of Education. Children's classes and the Oread Training School offer opportunity for observation and practice teaching.

Teachers with experience in public schools and with some musical training, who desire to enter a special field, will find this course suited to their needs. Such students may be able to complete the course in one year. Students may combine work in this department with the four years' course in liberal arts or fine arts. The University offers unusual advantages to students wishing the best preparation for efficient teaching, especially to those who wish to prepare themselves to teach music in high schools, in addition to being prepared to teach English, German or some other subject.

At least one year of study in singing is required of students who prefer piano as a major. Ability to play the simpler compositions for piano or other instruments is required of students who take singing as a major.

Second-year students must attend vesper choir rehearsals if they are not members of a church choir.

Teachers with normal training or experience in public schools and some preparatory work in music may be able to complete the two years' course in one year. Credit is allowed for teaching experience or normal training in accredited schools.

A total of eight hours of credit in the School of Education is required of candidates for certificates, selection of such courses to be made after conference with director of this department.

Suggested courses:

64.—Educational Psychology.

69.—Technique of Teaching.

72.—Elementary Education.

73.—Supervision.

FRESHMAN YEAR.

First Semester:

Teaching of Music in Elementary Schools 1, Monday and Thursday, at 8. Olsson.
Sight Singing 1, Monday and Thursday, at 9. Olsson.
Ear Training 1, Monday and Thursday at 9:30. Olsson.
Harmony (Musical Theory 1), Tuesday and Thursday, at 2. Skilton.
History of Music, Thursday, at 4. Skilton.
Choral Practice 1.
Electives in School of Education (64, 69, 72, 73).
Private lessons in voice or piano.

Second Semester:

Teaching of Music in Elementary Schools 2, Monday and Thursday, at 8. Olsson.
Sight Singing 2, Monday and Thursday, at 9. Olsson.
Ear Training 2, Monday and Thursday, at 9:30. Olsson.
Harmony (Musical Theory 2), Tuesday and Thursday, at 2. Skilton.
History of Music, Thursday, at 4. Skilton.
Choral Practice 2.
Electives in School of Education (64, 69, 72, 73).
Private lessons in voice or piano.

SOPHOMORE YEAR.

First Semester:

Form and Analysis, Tuesday and Thursday, at 11. Olsson.
Sight Singing 3, Tuesday and Thursday, at 10. Olsson.
Ear Training 3, Tuesday and Thursday, at 10:30. Olsson.
Harmony (Musical Theory 3), Tuesday and Friday, at 3. Skilton.
History of Music, Thursday, at 4. Skilton.
Choral Practice 3.
Electives in School of Education (64, 69, 72, 73).
Private lessons in voice or piano.

Second Semester:

Teaching of Music in High Schools and Practice Teaching, Tuesday and Thursday, at 11. Olsson.
Sight Singing 4, Tuesday and Thursday, at 10. Olsson.
Ear Training 4, Tuesday and Thursday, at 10:30. Olsson.
Harmony (Musical Theory 4), Tuesday and Friday, at 3. Skilton.
Instrumentation (Musical Theory 12), Wednesday, at 3. Skilton.
Choral Practice 4.
Electives in School of Education (64, 69, 72, 73).
Private lessons in voice or piano.

SCHOOL MUSIC COURSES.

TEACHING OF MUSIC IN ELEMENTARY SCHOOLS. Logical development in teaching: Rote song; staff notation; scales without technical explanation; scales with technical explanation; use of paper keyboards; ear training; reading at sight; triads; chords; simple modulation; transposition.

General Pedagogical Problems.—Advantage of normal training; relation of supervisor to grade teacher, principal, and superintendent; types of children. Examination of books and materials.

EAR TRAINING AND DICTATION. *First Year.*—Melodic and rhythmic dictation within the key; triads in all forms; triads in key relation, major and minor; the dominant sept chord.

Second Year.—Short review of first-year work; two-part melodic dictation; simple modulations; the various sept chords and their resolutions and progressions; chromatic and passing tones; dictation work with chords.

SIGHT SINGING OR SOLFEGGIO. *Elementary.*—Degree-wise progressions within the key; tapping rhythm; drill on simple intervals in chord lines; individual and class work. Textbook, "Melodia," Cole and Lewis.

Intermediate and Advanced.—More difficult problems in rhythm and intervals; two-, three- and four-part work. Texts: "Melodia," Cole and Lewis; "Harmonia," Cole and Lewis.

Students may enter classes upon examination or satisfactory completion of previous work.

TEACHING OF MUSIC IN HIGH SCHOOLS. High-school music from artistic and scientific viewpoints. Choral singing (including sight singing); girls' and boys' glee clubs; high-school orchestra; classes in history and theory (harmony, ear training, analysis). Outlines for courses of study in logical development of teaching the simpler forms of musical theory, suitable for use in high schools.

General Pedagogical Problems.—The general supervisor as high-school teacher of music; preparation of University graduates for teaching music and some other subject; the relation of the music teacher to other teachers in the high school; value of courses in psychology and education to those preparing to teach music; planning work for high schools where no definite work courses have been followed. Examination of books and materials.

Practice teaching and observation of classes in Oread Training School, by appointment with director of this department.

FORM AND ANALYSIS. Reading of simple chords from hymns and chorales; analysis of keys in songs and piano music, with particular attention to modulation and key relationship, the use of passing tones, simple suspensions. Analysis of some of

Bach's Inventions, Mendelssohn's Songs Without Words, etc., for illustrations of the simpler musical forms. This course not required of those completing the regular fine arts course.

TWO-YEAR COLLEGIATE COURSES.

These courses (identical with the work of the first and second years of the four-year collegiate courses outlined above) are intended for those students who feel that their time is limited. They are especially designed for teachers. A certificate is given upon completion of one of these courses.

ARTISTS' COURSES.

IN PIANO, VOICE, VIOLIN, ORGAN, OR MUSICAL COMPOSITION.

These courses are the same as the four-year collegiate courses in these subjects, requiring for graduation a graduating recital or a program of original musical compositions, or a combination of both.

For entrance and continuation in these courses the highest grade will be required in all examinations in piano, voice, organ, violin, or composition.

GRADUATE COURSES.

See Graduate School.

DESCRIPTION OF COURSES.

The courses in English, French, Italian, German, Greek, physical education and physics are given in the College. They are open to regular Fine Arts students, on application to the Dean of the School of Fine Arts, but students must also enroll with the Dean of the College.

DRAWING AND PAINTING.

Professor GRIFFITH.
Miss BENSON.

All courses are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from the cast. The method of instruction aims to teach the student to construct form in a simple and correct manner. Freshman, throughout the year, Monday, Wednesday, and Friday, 1:30 to 4:30.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from life. Designed to give firm construction in drawing, and training in grasping the essential character of the model. Sophomore, first semester, and second semester, (a), Monday, Wednesday, and Friday, 1:30 to 4:30.

3.—FREE-HAND DRAWING. Free-hand drawing in pen and ink, from cast and still life. The technique of pen drawing for reproduction. Sophomore, first semester, daily, 1:30 to 4:30.

4.—FREE-HAND DRAWING. Free-hand drawing with water colors. Wash-drawing for reproduction by the half-tone process. Sophomore, second semester, daily, 1:30 to 4:30.

5.—PAINTING. Painting with water color, oil, or pastille, from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshman, second semester; Sophomore, first semester and second semester; daily, 1:30 to 4:30.

6.—PAINTING. Painting with water color, oil, or pastille, from life. Portrait painting is the object of the instruction given in this class. Junior and Senior, first and second semesters, daily, 1:30 to 4:30.

7.—PAINTING. Painting of landscape and human figures in the open air. Junior and Senior, second semester, daily, 1:30 to 5:30.

8.—COMPOSITION. Throughout the entire course every student is required to study the pictorial compositions of the masters, and each week to make one original composition upon a given subject. Tuesday, at 11:15.

9.—PERSPECTIVE. Linear perspective, shadows, and reflections. Freshman, first semester, Tuesday, at 11:15.

10.—HISTORY OF MODERN PAINTING. Freshman, first semester, Thursday, at 11:15.

11.—ORNAMENTAL DESIGN. The anatomy of pattern and the planning of ornament. Sophomore, first semester, Monday, Wednesday, and Friday, at 10:15.

12.—ORNAMENTAL DESIGN. The application of design for the production of ceramic art. Must be preceded by course 5. Monday, Wednesday, and Friday, at 8.

13.—HISTORY OF DESIGN. Two hours, first semester, Tuesday and Thursday, at 10:15.

ENGLISH LANGUAGE AND LITERATURE.

Professor DUNLAP.
Associate Professor O'LEARY.
Assistant Professor LYNN.
Assistant Professor GRAY.
Assistant Professor JOHNSON.
Assistant Professor GARDNER.

1.—RHETORIC AND ENGLISH COMPOSITION. Three hours, first semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Written and oral themes and exercises, with outlines of rhetorical theory. Required of all Freshmen in the School of Fine Arts. Gardner, and assistants.

2.—RHETORIC AND ENGLISH COMPOSITION. Two hours, second semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. A continuation of course 1. Required of all Freshmen in the School of Fine Arts. Gardner, and assistants.

10.—ENGLISH LITERATURE. Two hours, first semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. Class study of representative authors, with required library reading. Required in the first two years of the School of Fine Arts. Johnson, and assistants.

11.—ENGLISH LITERATURE. Three hours, second semester, at 8, 9, 10:15, 11:15, 1:30, 2:30, and 3:30. A continuation of course 10. Required in the first two years of the School of Fine Arts. Johnson, and assistants.

12 *a* and *b*.—HISTORY OF ENGLISH LITERATURE. Two or three hours, first semester. Three-hour divisions at 8, 9, 10:15, and 1:30. Two-hour divisions at 10:15 and 11:15. Required for admission to courses 76, 77, 78, and 87. Required of all students in the School of Fine Arts. Gray, and assistants.

13 *a* and *b*.—HISTORY OF ENGLISH LITERATURE. Two or three hours, second semester. Three-hour divisions at 10:15 and 11:15. Two-hour divisions at 8, 9, 10:15, and 1:30. A continuation of course 12. Required for admission to courses 76, 77, 78, and 87. Gray, and assistants.

50.—NARRATION AND DESCRIPTION. Three hours, first semester, at 8 and 9. A study of general principles, with exercises. O'Leary and Lynn.

51.—NARRATION AND DESCRIPTION. Two hours, second semester, at 8 and 9. A continuation of course 50. O'Leary and Lynn.

76.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, first semester, at 11:15. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, De Quincey, Hazlitt, Newman, Landor, Ruskin, and Stevenson. Two hours of library work daily and preparation of two theses. Dunlap.

77.—ENGLISH LITERATURE OF THE NINETEENTH CENTURY. Three hours, second semester, at 9. Poetry. Biographical and critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily and preparation of two theses. Dunlap.

78.—SHAKSPERE. Three hours, both semesters, at 10:15. Lectures upon the life and times of Shakspeare. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Dunlap.

87.—THE ENGLISH NOVEL. Three hours, second semester, at 11:15. A historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily and preparation of two theses. Dunlap.

FRENCH.

Professor GALLOO.
Assistant Professor NEUENSCHWANDER.
Assistant Professor WARD.
Mr. WINTER.
Miss GARDNER.

1.—ELEMENTARY FRENCH I. Five hours, first semester, daily, at 8, 9, 10:15, and 1:30. Also given in the second semester, five hours, daily, at 8. Drill in pronunciation, accidence and elementary syntax. Prerequisites, three years of Latin or three years of German. NeuenSchwander or Ward, Winter, and Cowper.

2.—ELEMENTARY FRENCH II. Five hours, second semester, daily, at 8, 9, 10:15, and 1:30. Also given in the first semester, five hours, daily, at 8. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. NeuenSchwander, Ward, Cowper, or Stanton.

3.—MODERN FRENCH PROSE. Three hours, both semesters—first semester, at 9; second semester, at 8. Translation and reading of some works of Mérimée, George Sand, Anatole France, and René Bazin. NeuenSchwander and Ward, or Stanton.

4.—COMPOSITION. Two hours, both semesters—first semester, at 9; second semester, at 8. Written exercises, intended chiefly as a grammatical review. Oral exercises. Dictation. Winter and Cowper.

SCHOOL OF FINE ARTS.

ITALIAN.

Professor GALLOO.

Assistant Professor WARD.

1.—ELEMENTARY ITALIAN I. Three hours, first semester, at 11:15. Grammar. Reading, De Amicis's *Cuore*. Ward and Stanton.

2.—ELEMENTARY ITALIAN II. Continuation of course 1. Three hours, second semester, at 1:30. Grammar, composition, and reading of modern authors. Ward and Stanton.

GERMAN.

Professor CARRUTH.

Assistant Professor ENGEL.

Assistant Professor CORBIN.

NOTE.—For admission to German 1 and 2, the full amount of three units of Latin is required.

1.—GERMAN GRAMMAR. Carruth's *Otis's Grammar*, with composition exercises. CARRUTH'S READER, about fifty pages. Five hours, first semester, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30; second semester, at 1:30. Engel, Corbin, and assistants.

2.—GERMAN READER, completed, and SCHILLER'S *WILHELM TELL* (complete). Also special exercises in word order and auxiliary verbs and sight-reading. Second semester, daily, at 8, 9, 10:15, 11:15, 1:30, and 3:30; first semester, at 9, 1:30, and 2:30. Engel, Corbin, and assistants.

3.—GERMAN PROSE. Lessing's *Minna v. Barnhelm*, etc. Preceded by review of grammar. Sight reading. Five hours, first semester, daily, at 8, 9, 10:15, 11:15, 2:30, and 3:30; second semester, at 9, 2:30, and 3:30. Engel, Corbin, and assistants.

4.—SCHILLER'S *WALLENSTEIN*. Five hours, second semester, daily, at 8, 9, 10:15, 11:15, 2:30, and 3:30; first semester, at 10:15 and 3:30. Engel, Corbin, and assistants.

GREEK.

Professor WILCOX.

61 and 62.—HISTORY OF GREEK ART. Lectures, recitations, private reading, writing of themes. First semester, two hours; second semester, three hours, at 11:15. Wilcox.

MUSICAL THEORY.

Professor SKILTON.

Professor PREYER.

The following courses are required of all students in the regular music courses, excepting 9 and 10, which are optional:

1.—HARMONY. The study of overtones, scales, intervals, triads and seventh chords and their inversions. The practical work consists of harmonizing melodies in soprano or bass and playing chord progressions at the piano. Freshman, first semester, Tuesday and Thursday, at 2. Chadwick's *Harmony* used. Skilton.

2.—HARMONY. The study of close and open harmony, dominant ninth and diminished seventh chords, modulations. Practical work continued. Freshmen, second semester, Tuesday and Thursday, at 2. Skilton.

3.—HARMONY. The study of modulation, irregular resolutions, altered chords, suspensions, passing tones, organ point, harmonization of florid melodies. Practical work continued. Sophomore, first semester, Tuesday and Friday, at 3. Skilton.

4.—HARMONY. Suspensions, passing tones, appoggiaturas, neighboring tones, organ point, harmonization of florid melodies, analysis. Practical work continued. Sophomore, second semester, Tuesday and Friday, at 3. Skilton.

5.—COUNTERPOINT. The different orders of single counterpoint in two, three and four parts. Junior, first semester, Monday, at 3. Preyer.

6.—COUNTERPOINT. Double and triple counterpoint; counterpoint in the twelfth and fifteenth and in more than four parts. Modern counterpoint. Junior, second semester, Monday, at 3. Preyer.

7.—MUSICAL COMPOSITION. The theme and variations, dance and song forms. Analysis of classical models and practical work. Junior, first semester, Thursday, at 3. Skilton.

8.—MUSICAL COMPOSITION. The sonata and rondo forms; analysis of classical sonatas; original work. Junior, second semester, Thursday, at 3. Skilton.

9.—MUSICAL COMPOSITION. Original work in modern forms. Open only to those who show talent for composition. Senior, first semester, Wednesday, at 9. Preyer.

10.—MUSICAL COMPOSITION. Continuation of course 9. These two courses are open only to those who show talent for composition. Senior, second semester, Wednesday, at 3. Preyer.

11.—CANON AND FUGUE. The various forms of canon and their use in composition. The fugue in two, three and four parts. Analysis of Bach fugues and original work. Senior, first semester, Wednesday, at 3. Preyer.

12.—INSTRUMENTATION. The nature and treatment of the different instruments of the orchestra. The overture, symphony, cantata. Practical work for the University Orchestra. Senior, second semester, Wednesday, at 3. Skilton.

ORGAN.

Professor SKILTON.

1.—MANUAL AND PEDAL STUDIES. Merkel or Archer. Pedal scales and arpeggios; the principles of hymn playing. Sophomore, first semester, one hour a week, by appointment.

2.—MANUAL AND PEDAL STUDIES. Buck's Studies in Pedal Phrasing; Schmidt's Organ Etudes; Bach's Little Preludes and Fugues; Flagler's The Organist's Treasury, and other selections. Sophomore, second semester, one hour, by appointment.

3.—SERVICE AND SOLO PLAYING. Buck's Choir Accompaniment. Various styles of hymn playing; accompaniment of solo and chorus. Schneider's Pedal Studies, easier preludes and fugues of Bach and Mendelssohn. Modern pieces by Batiste, Lemmens, Guilmant, and others. Junior, first semester, two hours, by appointment.

4.—SERVICE AND SOLO PLAYING. Arrangement of piano accompaniments, for organ. Practice in accompanying singers. The easier sonatas of Mendelssohn, Merkel, Guilmant, and others. Junior, second semester, two hours, by appointment.

5.—CHURCH AND CONCERT PLAYING. Practical work in playing the church service. The more difficult fugues and sonatas. Concert pieces by Widor, Guilmant, Saint-Saëns, Thiele, and others. Senior, first semester, two hours a week, by appointment.

6.—CHURCH AND CONCERT PLAYING. Extemporization and transposition. Program making. Preparation of a recital. Senior, second semester, two hours a week, by appointment.

7.—CHURCH MUSIC. The history of church music, examination of different schools and styles. Senior, first semester, one hour a week.

8 and 9.—ORGAN CONSTRUCTION. Examination of tracker, tubular pneumatic, and electric action in available organs. Practice in tuning. One hour a week, Junior year, by appointment.

PIANOFORTE.

Professor PREYER.
Assistant Professor GREISINGER.
Assistant Professor COOKE.
Miss MILLER.
Miss SWEENEY.

Courses 1 to 12, inclusive, are open only to students of the School of Fine Arts. Course 13 is open only to graduates in piano.

1 and 2.—PIANO. Hanon: Virtuoso Pianist. A limited number of studies from the following: Whiting Melodious Technical Exercises; Hoffman, etudes for the left hand; Cramer-Buelow, sixty selected etudes; Preyer, twenty etudes, op. 35 (Schirmer); Bach, two-part inventions (Litolff, op. 42), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Assistants.

3 and 4.—PIANO. Czerny: Daily Exercises. Etudes, selected according to the needs of the pupil, from Jensen, op. 32; MacDowell, op. 39; Haberbier, Etudes Poesies, op. 53; Preyer, op. 30 and 45; Hollaender, intermezzi for left hand; Bach, three-part inventions. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomores, throughout the year, twice a week, by appointment. Assistants.

5 and 6.—Phillipp: Daily Exercises. Clementi's *Gradus ad Parnassum*; Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc.; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Preyer.

7 and 8.—Joseffy: School of Advanced Piano Playing. Phillipp, etudes for the left hand; etudes from Chopin, op. 10 and op. 25; Rubinstein, op. 23, etc. Sonatas and concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Preyer.

9 to 12.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year. Wednesday, 3:30 to 4:30. Miller.

13.—TEACHING MATERIALS. A study of teaching materials for piano. Each pupil is required to keep a notebook, teach one practice student and attend a one-hour class each week. Open to all classes but Freshman and to advanced special students. Required of candidates for a certificate in piano. Greisinger.

PHYSICAL EDUCATION.

Professor NAISMITH.
Associate Professor JOHNSON.

1.—MARCHING. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; gymnastic games for recreation. First semester. Johnson.

2.—ADVANCED WORK IN FREE-HAND. Calisthenics, and hygienic work on the apparatus; athletics of an all-round nature; games for skill and physical judgment. Second semester. Johnson.

3.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. Fancy marching; games requiring skill and self-control: squad leading in calisthenics and apparatus work. First semester. Johnson.

4.—SPECIALIZING IN SOME LINE OF EXERCISE. Fencing and broadsword; conducting games, competitions, and exhibitions. Second semester. Johnson.

50.—MECHANICAL ANATOMY. Three hours, first semester, 8 to 10. The study of the bones, articulations and muscles in their relations as mechanical principles. Naismith.

PHYSICS.

Professor KESTER.
Assistant Professor STIMPSON.

2.—ELEMENTARY ACOUSTICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony.

Required of students of the School of Fine Arts. Third half term, Monday and Wednesday, at 4:30. Given in alternate years. Stimpson.

PUBLIC-SCHOOL MUSIC (See p. 281.)

SPANISH.

Professor GALLOO.

Mr. WINTER.

Miss GARDNER.

Miss ENKE.

1.—ELEMENTARY SPANISH I. Five hours, first semester, at 9, 11:15, or 1:30. An outline of grammar (Hills and Ford). Reading of short stories. Elementary composition. Prerequisites, three years of Latin or three years of German. In addition, one year of French is recommended. Winter or Enke.

2.—ELEMENTARY SPANISH II. Five hours, second semester, at 9 or 1:30. Grammar and composition. Reading of easy modern prose; Carrión-Aza, Pérez Galdós, Palacio Valdés, Alarcón, etc. Winter or Enke.

VIOLIN.

Professor MORSE.

Courses 1 to 4, inclusive, are required of all violin students.

1.—SCHRADIECK'S FINGER TECHNIC; Hermann's Violin School, book I; Hermann's School of Scales, book I; Kayser's Thirty-six Etudes, books II and III; violin duets by Dancla, Mazas, Viotti; selections from the simpler compositions of Hermann, Singelee, Alard, De Beriot, Dancla, Papini, Leonard, and Daube. By appointment.

2.—HERMANN'S VIOLIN SCHOOL, book II; Scales and Technic, by Bendix and Schradieck; Hermann's School of Scales, book II; Kreutzer's Forty Studies; sonatas selected from Mozart and Handel; violin duets by Mazas; concertos from the early Italian masters; selections from the compositions of David, De Beriot, Viotti, Rode, Kreutzer, Sauret, Papini, Handel, and Bazzini. Ensemble playing. By appointment.

3.—SCALES AND TECHNIC BY BENDIX (continued); Hermann's School of Scales, book III; Fiorillo's Thirty-six Etudes; concertos by De Beriot, Spohr, and Mozart. Selections from the Compositions of Souret, David, Wieniawski, Hauser, Vieuxtemps, Bazzini, and Bohm; sonatas for violin and piano, selected from Beethoven, Grieg, and Tartini. Ensemble playing. By appointment.

4.—SCALES AND TECHNIC BY SCHRADIECK; Hermann's School of Scales, book III; Rode's Thirty-six Caprices; Dancla's Twenty Etudes; concertos by Spohr, Mendelssohn, Beethoven, and Bruch; sonatas selected from J. S. Bach; compositions by Sarasate, Hubay, Raff, Vieuxtemps, Wieniawski, Sauret, Ernst, Brahms, and Ries; violin duets by Spohr. By Appointment.

VOCAL CULTURE.

Professor HUBACH.
Miss OLSSON.

Courses 1 to 5, inclusive, are required of all students taking the four years' work in vocal culture; courses 1, 2, 3 and 5 are open to all other musical students. Course 5 is required of all Sophomores. Course 8 is required of all students wishing to graduate as teachers.

1 and 2.—TONE PLACING. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Marchesi, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspeare. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

3 and 4.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspeare. English and Italian ballads. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

5 and 6.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment. Hubach.

7 and 8.—METHODS OF TONE PLACING AND BREATHING. A comparative study. Exercises for bravura singing from Marchesi. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from Italian opera and English oratorio. Senior, twice a week throughout the year, by appointment. Hubach.

9.—SIGHT SINGING. Sound relationship. Time relationship. Rhythm. Dictation exercises. Unison, two parts, three parts, and four parts. Olsson.

10.—OPERA. Solo and chorus drill in the standard operas. Those taking this course are united with other singers from the University and city to form the school of grand opera. One presentation of opera will be given each year.

11.—ORATORIO. Solo and chorus drill in the standard works. Singers from the University and city are united to form the Festival Chorus. Presentation of oratorios will be given each year. This society annually engages a standard orchestra and eminent soloists for the spring festival.

12.—TEACHER'S COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Hubach.

For description of graduate courses, see Graduate School.

For courses in Public-school Music, see p. 283.

THE SCHOOL OF LAW.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM H. CARRUTH, PH. D., Vice President.

JAMES W. GREEN, A. M., Dean, and Professor of Law.

WILLIAM L. BURDICK, PH. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Professor of Law.

HENRY C. HILL*, A. B., LL. B., Professor of Law.

HENRY W. HUMBLE, A. M., LL. B., Associate Professor of Law.

Lecturers for 1912-'13.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

THOMAS A. NOFTZGER, Attorney at Law, Anthony.

HENRY F. MASON, Justice of the Supreme Court of Kansas.

ALFRED W. BENSON, Justice of the Supreme Court of Kansas.

J. C. RUPPENTHAL, Judge of the District Court, Russell.

W. C. MICHAELS, Attorney at Law, Kansas City, Mo.

D. A. VALENTINE, Clerk of the Supreme Court of Kansas.

R. G. ANDERSON, Atchison, Kansas.

THOS. E. WAGSTAFF, Attorney at Law, Independence, Kansas.

PURPOSE OF THE SCHOOL.

It is the aim of the School of Law to give all its students a thorough acquaintance with the general principles of American law and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union, and to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

DEGREE GRANTED.

The course of study of the School of Law leads to the degree of bachelor of laws (LL. B.).

* Died April 7, 1913.

SYSTEM OF INSTRUCTION.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of five resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

METHOD OF TEACHING.

There are in general three methods of class instruction in law—by lectures, by textbooks, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the textbook method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course. Experience seems to have shown, however, that the students get a clearer and more lasting knowledge of the fundamental principles of law through the study of a textbook and recitations in the classroom, together with a parallel study of cases to illustrate the principles involved.

The student is given large opportunity for free discussion of the topics in question, and is brought as much as possible into personal touch with his instructor.

WORK IN PREPARATION FOR LAW.

All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

The College offers special work in subjects of great value as preparatory to law: English and American constitutional and political history, constitutional law, political science, economics, sociology, history of international and of common law, in rhetoric and English composition, and in debating. These courses are especially recommended in preparation for law.

REQUIREMENTS FOR ADMISSION.

Thirty hours credit in the College of Liberal Arts and Sciences of the University of Kansas, or its equivalent in some other university or approved college, in addition to graduation from a four-year high school, is required for entrance to the School of Law.

This credit may be proven by proper certificate of the authorities of the university or college where the work was done, or it may be obtained by examination upon application to the University of Kansas.

LENGTH OF LAW COURSE.

The completed course includes three years, each of which occupies thirty-six weeks (excluding two weeks' recess at Christmas). The first semester of the year 1913-'14 will begin on Wednesday, the 16th day of September, 1913.

COLLEGE AND SCHOOL OF LAW IN SIX YEARS.

A regular course in the College is strongly recommended. During his Senior year of the College a student is permitted to elect one half-year's work from the course in the School of Law, for which he will receive credit in his College course. By this arrangement, the student, by reasonable extra work, may finish both the College and the School of Law in six years.

COURSES OF LAW IN THE SUMMER SESSION.

Attention is called to the opportunity of shortening the law course, or of correcting irregularities therein, by taking such law subjects as are offered in the Summer Session of the University.

A course has been arranged which will enable a person who enrolls in three Summer Sessions to graduate after attending two regular sessions of the University, provided he has previously completed the preparatory work required for entrance to the Law School, as laid down in this catalogue. For each course the student is referred to the outline of course of study in the Summer and Regular Sessions.

ADMISSION TO ADVANCED STANDING.

Persons who have the requisite qualifications for admission to the school (see "Requirements for Admission," above) may be admitted to advanced standing in the Junior and Middle classes upon satisfying the Faculty as to their qualifications.

Certificates of work done in other law schools of recognized standing and equivalent requirements may be received in lieu of examinations for such advanced standing.

UNCLASSED STUDENTS.

Opportunity is given in the School of Law for the admission of persons of mature years who desire to pursue special work without following any prescribed course or becoming candidates for a degree.

The admission of such unclassified students is directly under the control of the Dean of the School, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as unclassified students must present satisfactory evidence of proper preparation for the studies desired, and must also meet other requirements as fixed by the Faculty.

Unclassed students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

EXAMINATIONS.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course. The degree of bachelor of laws will be conferred upon members of the Senior class who complete the course of study according to the requirements.

CERTIFICATE OF ATTENDANCE.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the school.

ADMISSION TO THE BAR.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. This act provides that applicants must be graduates of this School of Law or of an institution of equal standing, or they must have studied law for three years in a law office. The board of examiners meets at Topeka on the third Monday in January and June. Applications for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of application may be obtained from the clerk of the supreme court, Topeka, Kansas.

All applicants must present high-school certificates or affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit: three years English—grammar, rhetoric and literature; arithmetic, algebra, geometry; general history, Roman, English and American history; civil government; the elements of physics; physical geography, botany, biology; political economy and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

PRACTICE COURTS.

There are three practice courts in the School of Law, all of them under the immediate supervision of the member of the Faculty who devotes the major part of his time to this work. The sessions are held in the court room, which has been fitted with all of the furniture to be found in court rooms in actual practice. Ample accommodations are furnished for judge, jury, and practitioners.

THE JUNIOR PRACTICE COURT.

In the Junior year preliminary instruction is first given in the analysis of opinions, and in the preparation of cases for argument. Following this preliminary instruction, court is held

under the direction of the member of the Faculty in charge. The places of attorneys, clerk, and other court officers are filled in rotation by members of the class. Cases involving statements of fact are assigned. Written briefs are required to be prepared, served upon the opposing attorneys, and submitted to a court composed of two members of the class and the member of the Faculty. Written opinions containing a full discussion of the legal questions presented are required to be handed down by the student justices.

THE MIDDLE PRACTICE COURT.

The aim of the course of the Middle year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the common law, equity and code systems of civil procedure are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The code practice of the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw journal entries, instructions and findings, under direction of the instructor in charge of the course.

THE SENIOR PRACTICE COURT.

The work of this year is a continuation of the work of the preceding two years. The student is taught how to begin and prosecute a case in court. The former difficulty of originating facts in practice courts has been overcome, and all the testimony of complicated cases is placed in the hands of witnesses, who are interviewed by the attorneys assigned. The cases are then begun, prosecuted and determined as in actual practice. Juries are drawn and impaneled, the evidence produced, instructions given, verdicts and judgments rendered as in the justice of the peace courts and in the district courts of Kansas. Following this, appeals are prosecuted in due course to the supreme court, where briefs are filed and arguments made as in the supreme court of Kansas.

Only four attorneys are assigned to each case, and there are enough cases for all members of the class to act as trial attorneys and as attorneys in the appellate court. Every member of the Senior class is thus given an opportunity to conduct a case as in actual practice.

Instruction is also given in legal ethics and in office practice.

For members of the courts, a series of lectures on practical topics is arranged for the second term of each year.

FEEES AND EXPENSES.

For fees and expenses, see page 54.

STUDENT ORGANIZATIONS.

COOLEY CLUB. Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

KENT CLUB. The members of the Kent Club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

THE KANSAS UNIVERSITY LAW JOURNAL.

The Kansas University Law Journal is a monthly publication edited and managed by the students of the School of Law. In each issue appear the syllabi to the decisions of the supreme court of Kansas during the preceding month. So far as practicable, contributions to its columns are accepted from the law students and from members of the bar residing within the state, thus making the magazine a representative legal publication of the Kansas bar.

HONORS AND PRIZES.

By resolution, the State Bar Association of Kansas, as a recognition of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the papers submitted are passed upon by a committee appointed for the purpose.

DEBATING.

Interstate debates are held each year with Oklahoma, Missouri and Colorado state universities. Members of the Law School are admitted to the preliminary contest held for the purpose of choosing representatives on each of these debates. Those chosen receive practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University.

EQUIPMENT.

GREEN HALL. A building for the School of Law of the University was completed during the summer of 1905. The building cost \$65,000, and is one of the most complete and best-equipped law buildings in the West. It has three floors, devoted to recitation rooms, offices, library, and rooms for the Law School clubs. The library contains space for about 20,000 volumes, and private study rooms for students and Faculty open

into the reading room of the library. A large room is set aside for a practice court, and the best facilities possible are available for students of the law.

LIBRARIES. The law library is composed of 6500 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law textbooks, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as Lawyers' Reports Annotated, American Decisions, American Reports, the complete *Reporter* system, and the full reprints of the English cases. Limited space has prevented as rapid growth of the library as desired, and in the new building large additions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of nearly 68,000 volumes is at the disposal of the law students. They thus have at hand the largest and best-selected scholarly library in the Southwest. The city library, housed in the Carnegie building, is also open to students of the School of Law for books of fiction and general literature.

STATE LIBRARY. The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

PROGRAM OF STUDIES.

JUNIOR YEAR.

First Semester (first half) :

Contracts, Clark; Benjamin and Messenger's Cases. Daily, at 9. Green.

Criminal Law, Clark and Marshall. Daily, at 10:15. Burdick.

Elementary Law, Robinson. Daily, at 11:15. Humble.

Practice Court. Friday, at 1:30. Higgins.

First Semester (second half) :

Contracts (continued). Daily, at 9. Green.

Agency, Mechem's Outlines and Cases. Daily, at 10:15. Humble.

Torts, Simpson's Cases. Tuesday and Thursday, at 11:15. (—)

Practice Court. Friday, at 1:30. Higgins.

Second Semester (first half) :

Torts (continued). Monday, Wednesday and Friday, at 9. (—)

Sales, Burdick, and cases. Daily, at 10:15. Burdick.

Bailments, Goddard's Outline, Green's Cases. Daily, at 11:15. Humble.

Practice Court. Friday, at 1:30. Higgins.

Second Semester (second half) :

Suretyship, Henning's Cases. Daily, at 9. Humble.

Damages, Mechem and Gilbert's Cases. Daily, at 10:15. Humble.

Domestic Relations, Woodruff's Cases, and lectures. Daily, at 11:15. Burdick.

Practice Court. Friday, at 1:30. Higgins.

MIDDLE YEAR.

First Semester (first half) :

Common Law Pleading, Shipman, and cases. Daily, at 8. Higgins.

Insurance, Vance; Wambaugh's Cases. Daily, at 9. Humble.

Equity, Hutchins and Burke's Cases. Monday, Wednesday and Friday, at 11:15. (—)

Practice Court, Monday and Wednesday, 1:30. Higgins.

First Semester (second half) :

Equity Pleading, ———. Daily, at 8. Higgins.
 Quasi Contracts, Woodruff's Cases. Daily, at 10:15. Burdick.
 Equity (continued). Monday, Wednesday and Friday, at 11:15. (——)
 Practice Court. Monday and Wednesday, at 1:30. Higgins.

Second Semester (first half) :

Bills and Notes, Bigelow's text and cases. Monday, Wednesday and Friday, at 8. (——)
 Trusts, Hutchins and Burke's Cases. Tuesday and Thursday, at 8. (——)
 Evidence, Hughes; Wigmore's Cases. Daily, at 9. Green.
 Code Pleadings, Sutherland's Cases. Daily, at 10:15. Higgins.

Second Semester (second half) :

Bills and Notes (continued). Monday, Wednesday and Friday, at 8. (——)
 Trusts (continued). Tuesday and Thursday, at 8. (——)
 Evidence (continued). Daily, at 9. Green.
 Conflict of Laws, ———. Daily, at 10:15. Burdick.
 Practice Court. Monday and Wednesday, at 1:30. Higgins.

SENIOR YEAR.

First Semester (first half) :

Real Property, Tiedeman, with cases. Four times a week, at 9. Burdick.
 Roman Law, Lectures, Sohm's Institutes. Once a week, at 9. Burdick.
 Corporations, Thompson's Cases. Daily, at 10:15. (——)
 Practice Court. Tuesday and Thursday, at 1:30. Higgins.

First Semester (second half) :

Real Property (continued). Four times a week, at 9. Burdick.
 Roman Law (continued). Once a week, at 9. Burdick.
 Corporations (continued). Daily, at 10:15. (——)
 Bankruptcy, Williston's Cases. Tuesday and Thursday, at 11:15. Humble.
 Practice Court. Tuesday and Thursday, at 1:30. Higgins.

Second Semester (first half) :

Real Property (continued). Four times a week, at 9. Burdick.
 Roman Law (continued). Once a week, at 9. Burdick.
 Partnership, Gilmore's Cases. Daily, at 10:15. Humble.
 Constitutional Law, Black. Daily, at 11:15. Green.
 Practice Court. Tuesday and Thursday, at 1:30. Higgins.

Second Semester (second half) :

Wills, Costigan's Cases. Daily, at 10:15. (—)

Constitutional Law (continued). Daily, at 11:15. Green.

Practice Court. Tuesday and Thursday, at 1:30. Higgins.

Program of Studies for the Summer Session Course.

SUMMER SESSION OF 1913.—Criminal Law and Torts, Agency and Bills and Notes, Insurance and Partnership.

REGULAR SESSION OF 1913-'14.—Common Law Pleading, Contracts, Elementary Law, Equity Pleading, Quasi Contracts, Bills and Notes, Evidence, Sales, Bailments, Damages, Domestic Relations, and Practice Courts.

SUMMER SESSION OF 1914.—Agency and Insurance, Partnership and Wills, Criminal Law and Torts.

REGULAR SESSION OF 1914-'15.—Real Property and Roman Law, Corporations, Equity, Bankruptcy, Trusts, Code Pleading, Constitutional Law, Suretyship, Conflict of Laws, and Practice Courts.

SUMMER SESSION OF 1915.—Partnership and Wills, Agency and Insurance, Criminal Law and Torts.

The student must complete the course in not less than three Summer Sessions and two regular sessions. He will take the first two subjects stated under each of the above Summer Sessions and complete the subjects of the two regular sessions in the order given above.

See, also, course of law under the Summer Session.

A candidate desiring to take the Summer Session program should enter a Summer Session at the beginning of his course; his program of sessions will then be as follows: (1) Summer Session; (2) Regular Session; (3) Summer Session; (4) Regular Session; (5) Summer Session.

Courses of Study Open to Graduate Students.

100.—CONSTITUTIONAL LAW. Five hours credit. Daily, second semester, at 11:15. General principles governing constitutions; the United States and the states; establishment and amendment of constitutions; construction and interpretation; departmental powers; police power; eminent domain; taxation; civil rights; constitutional guaranties; laws impairing the obligation of contracts; retroactive laws. Green.

101.—COMMON LAW PLEADING. Two and one-half hours credit. Daily, first half of first semester, at 8. An analytical and historical study of the law of remedies at common law, including ancient modes of trial; special topics assigned, such as assumpsit, trover, trespass, for historical investigation of the development of the law of contracts and of torts. Higgins.

102.—JURISPRUDENCE. Two and one-half hours credit. Daily, first half of first semester, at 11:15. An analytical study of the elements of jurisprudence, viz.: the science of human relations

regulated by positive law; the theories of the state, sovereignty and government; a historical examination of the systems of English and American common law and equity. Selected readings. Special topics and weekly conferences. Humble.

103.—ROMAN LAW. One hour a week for twenty-seven weeks, first semester and first half of second semester, at 9. Development and extension of Roman law; its revival and present influence; the *corpus juris civilis*; the law of persons, of the family, of property, of servitudes, of obligations, of delicts, of inheritance, of procedure, of criminal law, etc. Burdick.

For Mining Engineering Students.

MINING LAW. A course outlining the laws relating to the mining industries. Lectures and recitations, one hour per week, second semester, in alternate years. Given in 1912-'13. Omitted in 1913-'14. Text, Costigan on Mining Law. Mining students must take this course before graduating. Humble.

THE SCHOOL OF PHARMACY.

FACULTY.

- FRANK STRONG, PH. D., President.
- WILLIAM H. CARRUTH, PH. D., Vice President, and Professor of Germanic Languages and Literatures.
- LUCIUS E. SAYRE, PH. G., B. S., PH. M., Dean, and Professor of Pharmacy and Materia Medica.
- EDGAR H. S. BAILEY, PH. D., Professor of Chemistry.
- ERASMUS HAWORTH, PH. D., Professor of Mineralogy.
- WILLIAM C. STEVENS, M. S., Professor of Botany.
- EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.
- IDA H. HYDE, PH. D., Professor of Physiology.
- WILLIAM E. HIGGINS, LL. B., Professor of Law.
- L. D. HAVENHILL, PH. C., PHAR. M., B. S., Professor of Pharmaceutical Chemistry.
- F. E. KESTER, PH. D., Professor of Physics.
- H. P. CADY, PH. D., Professor of Chemistry.
- T. H. BOUGHTON, M. D., Professor of Bacteriology and Pathology.
- ELMER F. ENGEL, A. M., Associate Professor of German.
- JOHN N. VAN DER VRIES, PH. D., Associate Professor of Mathematics.
- FREDERICK H. BILLINGS, PH. D., Associate Professor of Botany and Bacteriology.
- F. B. DAINS, PH. D., Associate Professor of Chemistry.
- CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.
- HERBERT W. EMERSON, B. S., (Secretary), Assistant Professor of Pharmacy.
- GEORGE N. WATSON, A. B., PH. C., Assistant Professor of Pharmacy.
- GEO. W. STRATTON, Instructor in Chemistry.
- ARTHUR EARL STEVENSON, B. S., Assistant in the Drug Laboratory.

PURPOSE OF THE SCHOOL.

The object of this school is to give its students a thorough practical training in all of those branches connected with the pharmaceutical profession in its various departments. Special emphasis is purposely placed upon chemistry, as this is the foundation of all pharmaceutical work.

The three courses offered by the school are arranged logically and progressively; the instruction is given according to modern methods, and in the spirit of those principles which, in their application to other classes of modern technical schools, have proved so eminently successful.

Students desiring to fit themselves for food and drug analysts can arrange a course with the two departments, pharmacy and chemistry. The details of such a course will be outlined by the department, covering the period of time that the student may elect to spend in preparation.

DEGREES.

The courses of study in the School of Pharmacy lead to the following degrees:

Bachelor of science.

Pharmaceutical chemist.

REQUIREMENTS FOR ADMISSION.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

1. BY EXAMINATION.

Time and place of examination for subjects required for admission to the School of Pharmacy will be found in this catalogue, on page 110.

2. BY CERTIFICATE.

Candidates for admission to the two- and three-year courses must present certificates of graduation from accredited schools, or certificates of the completion of three years' work in high school. In 1914 four years' work in an accredited high school will be required, or its equivalent. Students of mature years who have had two or more years' drug-store experience will receive credit on some of the required high-school work.

Students having entrance deficiencies are required to enroll in the three-year course.

FOR THE FOUR-YEAR COURSE.

Candidates for admission to the four-year course must conform, by examination or certificate, to the requirements for entrance to the Freshman year of the College. During the first two years students taking the four-year pharmacy course are

enrolled in both the College and the School of Pharmacy, and pursue such College courses as are included in the curriculum of the School of Pharmacy. They are required to pay only the College incidental fee as long as their work is confined to courses offered in the College.

UNCLASSED STUDENTS.

Unclassed students (formerly known as "special students"), not candidates for a degree, may be admitted to the School of Pharmacy without conforming to the requirements for entrance. The admission of such students is under the control of the Dean, and his certificate of recommendation must be procured before the student presents himself to the Registrar.

FEES AND EXPENSES.

For fees and expenses, see page 54.

POSITIONS FOR GRADUATES.

As an adjunct to the Pharmaceutical Society, an "annex" was established in 1890, whose aim it is to secure positions for graduates, and clerks for employers, who are graduates of the school. At present the demand is greater than the supply.

LIBRARY.

The school possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy, a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where the principal reference books and periodicals may be found.

COLLECTIONS.

The Pharmacy School possesses an extensive herbarium of medicinal plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscope slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal section, as well as in powdered form; a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest, several cases of crystal models, an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

LOCATION.

The School of Pharmacy occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, bacteriology, botany, mineralogy, physiology, and physics.

APPARATUS.

For the various practical courses offered by this school a large amount of laboratory apparatus, of domestic and foreign types, is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States Pharmacopœia can be made by any of the official methods, and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Care has been taken to illustrate pharmacy in all its phases.

REGISTRATION—STATE BOARD OF PHARMACY.

Graduates of the School of Pharmacy may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy satisfactory evidence of having had the following amount of practical experience in drug stores where physicians' prescriptions are compounded:

Thirty months for graduates of the two-year course.

Twenty-one months for graduates of the three-year course.

Twelve months for graduates of the four-year course.

A SUMMER SCHOOL COURSE.

During the summer of 1913, beginning June 12, courses of six weeks in pharmacy will be offered.

These courses are designed especially for drug clerks of mature years who are desirous of an opportunity to increase their knowledge and efficiency in a short time.

Clerks who desire to prepare themselves for State Board of Pharmacy examination will find this course especially adapted to their needs.

Instruction will be given in pharmacy, pharmaceutical chemistry, materia medica, prescriptions, and identification. Supplemental work will be given in the excellently equipped laboratories of the school, and particular attention will be given to preparing and dispensing drugs in accordance with the "pure food and drugs law."

The Summer School course will be especially valuable to those who desire practical drill in connection with their correspondence course.

The courses are open to all who are qualified to pursue them to advantage; no formal entrance requirements are exacted.

A record will be kept of all work done of university grade and such work will be credited towards a degree when the candidate has fulfilled the requirements for entrance to the regular course.

FEES AND EXPENSES.—The fees for the Summer School will be ten dollars for Kansas students; for nonresidents, fifteen dollars. For the laboratory work there will be, in addition, the cost of material.

For further information, address Prof. L. D. Havenhill, Lawrence, Kan.

CORRESPONDENCE-STUDY DEPARTMENT.

PHARMACY.

UNIVERSITY EXTENSION DIVISION.

RICHARD R. PRICE, Director.

PHARMACY CORRESPONDENCE COURSE.

These courses provide many opportunities to those who can not attend the University. Among them are: (1) Home-study courses, for persons who contemplate the vocation of pharmacy but lack some of the entrance requirements exacted by the preliminary education demanded by the State Board of Pharmacy; (2) means of preparing for registered assistant pharmacist; (3) means of preparing for registered pharmacist's examination; (4) means of keeping abreast of the times in those subjects applicable to the practice of pharmacy, in which science is making additions to our knowledge.

The fees will be those regularly required in the Correspondence-Study Department, \$10 per year for residents and \$15 per year for nonresidents. The additional expense for material used in resident work will, with economy, range from \$8 to \$12 per six weeks' session.

A complete course in pharmacy is offered, which is intended primarily to foster the spirit of apprenticeship and to establish a more cordial relation between apprentice and preceptor, and thus advance the interests of pharmacy as a vocation.

The course will consist of forty assignments each in the following branches and their subdivisions: (a) Chemistry, (b) materia medica, (c) pharmacy; and two supplemental Summer Sessions of six weeks each in the laboratories of the School of Pharmacy at Lawrence. The course is intended to extend over two calendar years (sixty assignments per year). Students taking this course are subject to the regulations of the Correspondence-Study Department.

No entrance examinations are exacted. One year of high-school training is recommended, but the course is open to all who can pursue it profitably. Students may begin the course any time.

ORDER OF STUDY RECOMMENDED.

First Year by Correspondence.

	Assignments
Descriptive Pharmacy	1 to 7 incl.
Metrology, Specific Gravity, and Pharmaceutical Arithmetic	8 to 15
Official Pharmacy	16 to 20
Elementary Pharmacy Physics and Pharmacy Inorganic Chemistry	21 to 40
Pharmacognosy with Botanical Introduction	41 to 50
Outline of Physiology and Introduction to Materia Medica	51 to 60
Summer, six weeks in residence, optional:	
Inorganic Pharmaceutical Testing	2 hours per day
Manufacturing Pharmacy	2 hours per day
Quiz	1 hour per day

Second Year by Correspondence.

	Assignments
Advanced Official Pharmacy	61 to 75 incl.
Organic Pharmacy Chemistry	76 to 95
Pharmacy Latin and Principles of Prescription Writing	96 to 98
Pharmaco- and Therapy-dynamics	99 to 113
Toxicology and Posology	114 to 118
Pharmaceutical Jurisprudence	119 to 120
Second Summer, six weeks in residence, optional:	
Pharmaceutical Organic Chemistry	2 hours per day
Histological Pharmacognosy	2 hours per day
Extemporaneous Pharmacy	2 hours per day
Quiz	1 hour per day

The following courses, offered in the College of Liberal Arts, correspond to similar courses offered in residence at the University of Kansas. The studies may be taken for credit, to apply in the regular Pharmacy course, by those who possess the essential entrance requirements.

	Assignments.	Hours' credit.
<i>Botany.</i>		
I.—General Morphology of Plants.....	40	5
II.—Plant Histology	40	5
<i>Chemistry.</i>		
I.—Elementary Chemistry	40	5
II.—Quantitative Analysis	40	5
<i>English.</i>		
I.—Rhetoric and English Composition..	40	5
<i>French.</i>		
I.—Elementary French, Part A.....	40	5
II.—Elementary French, Part B.....	40	5

<i>German.</i>	Assign- ments.	Hours' credit.
I.—German Grammar	40	5
II.—German Reader	40	5
III.—German Prose	40	5
IV.—Schiller's Wallenstein	40	5
<i>Mathematics.</i>		
I.—Solid Geometry	20	2½
II.—University Algebra	24	3
III.—Plane Trigonometry	16	2
IV.—Analytical Geometry	32	4
<i>Physics.</i>		
I.—Elementary Physics	24	3
II.—Sound, Light and Electricity.....	24	3

Further information concerning the scope of the above courses will be found under the proper heading in the description of courses in the School of Pharmacy, or in the Bulletin of the Correspondence-study Department, Extension Division of the University of Kansas, a copy of which will be gladly mailed upon request.

ADDITIONAL COURSES IN PHARMACY AND MATERIA MEDICA BY CORRESPONDENCE.

(Independent Course.)

COURSE I.—INTRODUCTORY PHARMACY. This course consists of two parts, A and B. Course A is designed to acquaint the students with the apparatus and instruments and to familiarize him with the operations and manipulations necessary to carry out pharmaceutical processes and physical tests. Course B covers the study of preparations and processes of the United States Pharmacopœia and National Formulary. Twenty assignments.

COURSE 2.—ORGANIC MATERIA MEDICA. This course embraces the classification, physical description and chemical constitution of the crude drugs of the pharmacopœias; their chemical and physiological properties; methods of prescribing and dispensing; the action of organic and inorganic chemicals and their physiological relationships. Twenty assignments.

COURSE 3.—PHARMACY PHYSIOLOGY. This course is designed to meet the needs of pharmacists and to fulfill the legal requirements for pharmacists in the state of Kansas, and corresponds to the course offered in the School of Pharmacy. It is a brief course in physiology and hygiene, consisting of recitation and demonstration based upon the essential structures and functions of the human body, supplemented by practical laboratory experiments. The treatment of emergency cases, observations on the action of drugs upon the tissues, the relation of the different organs and bones to each other, and the structure of the chief tissues, are some of the subjects dealt with. Twenty assignments.

PROGRAM OF STUDIES.

The School of Pharmacy offers three complete programs of study, one of two years and one of three years—both leading to the degree of pharmaceutical chemist—and one of four years, leading to the degree of bachelor of science.

THE TWO-YEAR PROGRAM.

This is the regular course in pharmacy, first established by an act of the legislature, and leads to the degree of pharmaceutical chemist (Ph. C.). The curriculum is confined to pharmaceutical work. The higher work of the other courses gives greater breadth of training, and prepares students for service with larger concerns and with manufacturing chemists.

THE THREE-YEAR PROGRAM.

This course is endorsed by the Kansas Pharmaceutical Association, and is especially recommended to those students who have had no drug-store experience and to those who have entrance deficiencies. Special opportunities are offered in this course for work in the field of drug standardization and analysis. The course leads to the degree of Ph. C. Besides the diploma, a special certificate of proficiency is issued by the Dean upon the completion of the course of study outlined.

THE FOUR-YEAR PROGRAM.

This course, leading to the degree of bachelor of science, from which the student graduates on a plane with the regular students of the College, opens the door, as does the bachelor of arts degree, to the degree of master of arts or doctor of philosophy, should the student desire to pursue his studies to that extent, and thus prepare himself for the higher calling of educational or higher technical work.

TWO-YEAR COURSE.

Leading to the Degree of Pharmaceutical Chemist.

JUNIOR YEAR.

First Semester

Pharmacal Botany, (a), 10:15 to 12:15. Sterling.

Plant Histology I, (b), 10:15 to 12:15. Sterling.

Introductory Pharmacy, (a and b), Tuesday and Thursday, 8 to 9. Havenhill.

Pharmaceutical Arithmetic, (a and b), Monday, Wednesday, and Friday, 8 and 9. Havenhill.

Introductory Chemistry, (a and b), 1:30 to 3:30. Stratton.

Materia Medica I, (b), 11:15 to 12:15. Sayre.

Second Semester:

Plant Histology II (Elementary Pharmacognosy), (a), 8 to 10. Sterling.
 Pharmacognosy, (b), 9 to 10. Sterling.
 Official Pharmacy, (a), 10:15 to 11:15. Watson.
 Inorganic Medicinal Salts, (b), 10:15 to 11:15. Havenhill.
 Qualitative Analysis, (a and b), 1:30 to 3:30. Stratton.

First Semester:

SENIOR YEAR.

Examination of Powdered Drugs, (a), 8 to 10. Sterling.
 Urinalysis, (b), 8 to 10. Emerson.
 Galenical Preparations, (a and b), 3:30 to 5:30. Watson.
 Organic Chemistry, (a and b), 1:30 to 3:30. Dains, and assistant.
 Quantitative Analysis, (a), 10:15 to 12:15. Allen.
 Pharmaceutical Testing, (b), 10:15 to 12:15. Emerson.

Second Semester:

Drug Analysis, (a), 8 to 10, and (b), 1:30 to 3:30. Havenhill.
 Theory and Practice, (a), 10:15 to 11:15. Havenhill.
 Physiology, (b), 8 to 10. Chillingworth.
 Materia Medica, Pharmacology and Toxicology, (b), 11:15 to 12:15. Sayre.
 Dispensing, (a), 3:30 to 5:30. Emerson.
 Thesis, (a), 1:30 to 3:30. Sayre.

THREE-YEAR COURSE.

Leading to the Degree of Pharmaceutical Chemist.

First Semester:

FIRST YEAR.

Pharmaceutical Botany, (a), 10:15 to 12:15. Sterling.
 Plant Histology, (b), 10:15 to 12:15. Sterling.
 Introductory Chemistry, (a and b), 1:30 to 3:30. Stratton.
 Pharmaceutical Arithmetic, (a and b), Monday, Wednesday, and Friday, 8 and 9. Havenhill.
 Introductory Pharmacy, (a and b), Tuesday and Thursday, 8 to 9. Havenhill.

Second Semester:

Plant Histology II (Elementary Pharmacognosy), (a), 8 to 10. Sterling.
 Pharmacognosy, (b), 9 to 10. Sterling.
 Qualitative Analysis, (a and b), 1:30 to 3:30. Stratton.
 Official Pharmacy, (a), 10:15 to 11:15. Watson.
 Inorganic Medicinal Salts, (b), 10:15 to 11:15. Havenhill.

First Semester:

SECOND YEAR.

Examination of Powdered Drugs, (a), 8 to 10. Sterling.
 Materia Medica I, (b), 11:15 to 12:15. Sayre.
 Organic Chemistry, (a and b), 1:30 to 3:30. Dains.
 Quantitative Analysis,* (a and b), 3:30 to 5:30. Allen.

* These five-hour courses are recommended; students may substitute the two and one-half hour courses of the two-year course.

Second Semester:

Drug Analysis, (a), 8 to 10, and (b), 1:30 to 3:30. Havenhill.
 Plant Analysis (elective), (b), 8 to 10. Havenhill.
 Physiology, (b), 8 to 10. Chillingworth.

THIRD YEAR.

First Semester:

Galenical Preparations, (a and b), 3:30 to 5:30. Watson.
 Bacteriology, (a and b), 1:30 to 3:30. Boughton.
 Pharmaceutical Testing, (b), 10:15 to 12:15. Emerson.

Second Semester:

Thesis, (b), 9 to 11:15. Sayre.
 Theory and Practice, (a), 10:15 to 11:15. Havenhill.
 Materia Medica, Pharmacology and Toxicology, (b), 11:15 to 12:15. Sayre.
 Physiological Chemistry, (a and b), 1:30 to 3:30. Emerson.
 Dispensing, (a), 3:30 to 5:30. Emerson.

FOUR-YEAR COURSE.

Leading to the Degree of Bachelor of Science in Pharmacy.

We recommend that candidates for the degree of bachelor of science in pharmacy shall complete, as far as possible, by the end of the Sophomore year, the following studies: German I to IV; French I and II; chemistry I, II and III; botany I and II; mathematics, 5 hours; physics, 10 hours; English, 5 hours; physiology, 5 hours.

They must have sixty hours' credit in the College at the end of their Sophomore year.

JUNIOR YEAR.

First Semester:

Pharmacal Botany,* (a), 10:15 to 12:15. Sterling.
 Plant Histology I,* (b), 10:15 to 12:15. Sterling.
 Introductory Pharmacy, (a), Tuesday and Thursday, 8 to 9. Havenhill.
 Pharmaceutical Arithmetic, (b), Monday, Wednesday and Friday, 8 and 9. Havenhill.
 Organic Chemistry, (a and b), 1:30 to 3:30. Dains and assistant.
 Quantitative Analysis, (a and b), 3:30 to 5:30. Allen.
 Materia Medica, (b), 11:15 to 12:15. Sayre.

Second Semester:

Plant Histology and Elementary Pharmacognosy, (a), 8 to 10. Sterling.
 Pharmacognosy, (b), 9 to 10. Sterling.
 Official Pharmacy, (a), 10:15 to 11:15. Watson.
 Inorganic Medicinal Salts, (b), 10:15 to 11:25. Havenhill.
 Physiological Chemistry, (a and b), 1:30 to 3:30. Emerson.

* If 10 hours of botany have been taken in College it will be substituted here.

SENIOR YEAR.

First Semester:

Examination of Powdered Drugs, (a), 8 to 10. Sterling.
Galenical Preparations, (a and b), 3:30 to 5:30. Watson.
Bacteriology, (a and b), 1:30 to 3:30. Boughton.
Pharmaceutical Testing, (b), 10:15 to 12:15. Emerson.

Second Semester:

Drug Analysis, (a), 8 to 10; (b), 1:30 to 3:30. Havenhill.
Physiology,† (b), 8 to 10. Chillingworth.
Theory and Practice, (a), 10:15 to 11:15. Havenhill.
Materia Medica, Pharmacology and Toxicology, (b), 11:15 to
12:15. Sayre.
Dispensing, (a), 3:30 to 5:30. Emerson.
Thesis, (a), 1:30 to 3:30. Sayre.

† If 5 hours of physiology have been taken in the College it will be substituted here.

DESCRIPTION OF COURSES.

BOTANY AND PHARMACOGNOSY.

Professor STEVENS.

Professor SAYRE.

Professor BOUGHTON.

Assistant Professor STERLING.

1.—PHARMACAL BOTANY. Two and one-half hours' credit. An introduction to morphology and taxonomy of phanerogams. Laboratory work, recitations, and lectures. Required of Juniors entering without credit in botany. Credit may be given those who by presenting satisfactory proof show that their elementary work is equivalent to this course. First semester, (a), 10:15 to 12:15. Sterling.

2.—ELEMENTARY BOTANY. Five hours, second semester, 1:30 to 3:30. An introduction to the forms and parts of plants, and the way typical plants perform their functions and conform to their environment. This course, or the equivalent in other schools, is a prerequisite to course III. Laboratory work, ten hours a week; reading, recitations and lectures. Stevens, Sterling, and assistants.

3.—PLANT HISTORY. Five hours, first semester, 1:30 to 3:30. A study of plant tissues, with special reference to their development and function; plant products, their origin and physiological and biological significance; histological technique. Laboratory work, ten hours a week, recitations and lectures. Prerequisite, course 1. Stevens and assistant.

4.—PLANT HISTOLOGY. Two and one-half hours' credit. A study of the plant tissues; histological technique and the preparation of specimens. Open to all students who have had courses 1 or 3. Laboratory work, lectures and recitations. First semester, (b), 8 to 10. Sterling.

5.—PLANT HISTOLOGY AND INTRODUCTION TO PHARMACOGNOSY. Two and one-half hours' credit. A continuation of course 4. Laboratory work, lectures and recitations. Second semester, (a), 8 to 10. Sterling.

6.—PHARMACOGNOSY. Two and one-half hours' credit. A study of the geographical distribution, origin and physical characteristics of crude drugs. Lectures, recitations, and laboratory work. Must be preceded by course 3 or 5. Junior, second semester, (b), 9 to 10. Sterling.

7.—BACTERIOLOGY. Five hours' credit. Bacteriological technique. Pathogenic bacteria, and other forms of economic importance. Laboratory work, reading, and lectures. First semester, (a and b), 1:30 to 3:30. Boughton.

8.—THE ANALYSIS OF POWDERED DRUGS, SPICES, AND FOODS. Laboratory work, lectures, and recitations. Must be preceded by course 6. Second semester, (a), 1:30 to 3:30. Sterling.

CHEMISTRY.

Professor BAILEY.
Professor SAYRE.
Professor HAVENHILL.
Associate Professor DAINS.
Assistant Professor EMERSON.
Assistant Professor ALLEN.
Assistant Instructor STRATTON.

1.—INTRODUCTORY CHEMISTRY. Five hours' credit. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Junior, first semester, (*a* and *b*), 1:30 to 3:30. Bailey and assistants.

2.—PHARMACY QUALITATIVE ANALYSIS. Five hours' credit. Must be preceded by course I or College courses 1 and 2. Lectures, recitations, and laboratory work. Junior, second semester (*a* and *b*), 1:30 to 3:30. Stratton.

3.—PHARMACY QUANTITATIVE ANALYSIS. Two and one-half hours' credit. A course especially adapted to the needs of the pharmacist, involving the simpler methods of gravimetric and volumetric analysis. Lectures and laboratory work. Must be preceded by course II. Senior, first semester, (*a*), 10:15 to 12:15. Allen.

4.—QUANTITATIVE ANALYSIS. Five hours' credit. A course similar to III, extending over whole semester. First semester, (*a* and *b*), 3:30 to 5:30. Allen.

5.—ORGANIC CHEMISTRY. A study of the hydrocarbons and their derivatives. Lectures and recitations, Monday, Wednesday, and Friday; Laboratory work, Tuesday and Thursday. Must be preceded by courses I and II. Senior, first semester, (*a* and *b*), 1:30 to 3:30. Dains and assistant.

*6.—PHARMACEUTICAL TESTING I. Two and one-half hours' credit. Laboratory practice in testing the purity and strength of the inorganic medicinal chemicals of the United States Pharmacopœia. Must be preceded by course III or equivalent. First semester, (*b*), 10:15 to 12:15. Emerson.

7.—URINE AND STOMACH ANALYSIS. A ten-weeks course of lectures, recitations and laboratory work in stomach and urine analysis. Must be preceded by courses I, II, III, IV and V. First semester, (*b*), 8 to 10. Emerson.

8.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. Five hours' credit. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second

* Courses VI, VII, XIII and XIV are especially recommended for those students who are preparing themselves for responsible positions as registered pharmacists; as proprietors of pharmacies, and as pharmaceutical chemists; for special work in analysis of drugs and medicines, now regulated by the pure food and drug law. The demand for pharmaceutical chemists in large establishments is one that the school will aim to supply, and the courses referred to will prepare students to occupy such positions.

part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. Second semester, 1:30 to 3:30. Sayre and Emerson.

9.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Analysis of such dietetics as are used in medicine, and the quantitative estimation of digestive ferments; the preparation of proximate constituents from animal tissues. Must be preceded by course VIII, and is open to all students who have passed that subject. Sayre and Emerson.

10.—FOOD ANALYSIS. A four-hour course in the study of foodstuffs and their analysis. This course is arranged especially for students who are preparing to be food and drug chemists. Jackson.

11.—PLANT ANALYSIS I. Two and one-half hours. The separation and estimation of the proximate principles of plants. Must be preceded by course III or equivalent. Elective, hours by appointment. Havenhill.

12.—PLANT ANALYSIS II. Two and one-half hours. A systematic course of advanced work in the analysis of the chemical constituents of plants. Must be preceded by course XI. Elective, hours by appointment. Sayre.

13.—DRUG ANALYSIS. Five hours. The detection and estimation of potent drugs. Must be preceded by a course in quantitative analysis. Second semester, (a), 8 to 10, (b), 1:30 to 3:30. Havenhill.

14.—DRUG ASSAYING. Two and one-half hours' credit. Advanced work in the valuation and standardization of drugs. A research course, consisting of lectures, laboratory and library work, designed especially for those who desire to do advanced work in the subject. Must be preceded by courses I to V. By appointment. Sayre.

15.—ANALYSIS OF NOSTRUMS. Determination of composition of articles with secret formulas. Sayre.

16.—PHARMACEUTICAL TESTING II. Two and one-half hours. Laboratory practice in testing the strength and purity of the organic chemicals of the United States Pharmacopœia. Must be preceded by a course in quantitative analysis. Elective, hours by appointment. Havenhill.

17.—ANALYSIS OF DRUGS AND DIETETICS. Four hours, either semester. This is a companion course to food analysis (see 10), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre and Havenhill.

FRENCH.

Professor GALLOO.

Assistant Professor NEUENSCHWANDER.

Assistant Professor WARD.

Mr. WINTER.

1.—ELEMENTARY COURSE. Five hours. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation and in

forms. First semester. Five divisions. Daily, at 8, 9, 10:15, 11:15, or 1:30. Prerequisite, three years of Latin or three years of German. Galloo, NeuenSchwander, Ward, or Winter.

2.—ELEMENTARY COURSE. Five hours. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Second term, daily, at 11:15. Galloo, NeuenSchwander, Ward, or Winter.

GERMAN.

Professor CARRUTH.
Associate Professor ENGEL.
Associate Professor CORBIN.
Assistant Professor KRUSE.
Assistant Professor CAMPBELL.
Assistant Professor BRIGGS.
Assistant Professor STURTEVANT.
Miss WILSON.

1.—GERMAN GRAMMAR. Five hours. Carruth's Otis's Grammar, with composition exercises. Carruth's Reader, about fifty pages. First semester, daily, at 8, 9, 10:15, 11:15, 1:30, and 2:30; second semester, daily, at 1:30. Engel, Corbin, Kruse, Campbell, Briggs, Sturtevant, Wilson.

2.—GERMAN READER, completed, and Schiller's Wilhelm Tell (complete). Five hours. Also special exercises, in word order and auxiliary verbs and sight reading. Second semester, daily, at 8, 9, 11:15, and 1:30; first semester, daily, at 2:30. Engel, Corbin, Kruse, Campbell, Briggs, Sturtevant, Wilson.

3.—GERMAN PROSE. Five hours. Lessing's Minna von Barnhelm. Sight reading. First semester, daily, at 8, 9, 10:15, 11:15, 1:30, and 3:30; second semester, daily, at 9, 2:30, and 3:30. Engel, Corbin, Kruse, Campbell, Briggs, Sturtevant.

MATHEMATICS.

Professor YOUNG.
Associate Professor VAN DER VRIE.
Associate Professor ASHTON.
Assistant Professor MITCHELL.

1.—SOLID GEOMETRY. Three hours, second semester, at 1:30. The usual theorems and constructions of standard textbooks, and applications to the mensuration of surfaces and solids. Wentworth's Solid Geometry. Open to all students who do not offer solid geometry for entrance. Mitchell.

2.—COLLEGE ALGEBRA. Three hours, both semesters—first semester, at 8, 9, 10:15, 11:15, and 2:30; second semester, at 8, 9, and 2:30. Rapid review of exponents, radicals, and quadratic equations; graphical representation; complex numbers; logarithms; determinants; theory of equations; numerical equations of higher degree. Ashton's College Algebra. Mitchell.

3.—PLANE TRIGONOMETRY. Two hours, both semesters—first semester, at 8, 9, 10:15, 11:15, and 2:30; second semester, at 8, 9, and 2:30. The six trigonometric functions; principal formu-

las of plane trigonometry; solution of triangles and practical problems. Ashton's Trigonometry. May be taken at the same time with course 1 or 2. Mitchell.

4.—ANALYTIC GEOMETRY I. Two hours, both semesters—first semester, at 10:15 and 11:15; second semester, at 8, 9, and 2:30. The straight line and circle; plane and sphere; loci problems. Fine and Thompson's Coördinate Geometry. Open to all students who have completed courses 2 and 3. Mitchell.

6.—ANALYTICAL GEOMETRY II. Two hours—first semester, at 11:15, second semester, at 10:15. Conic sections; higher plane curves; solid analytics. Fine and Thompson's Coördinate Geometry. Open to students who have completed course 4. ———.

PHARMACY AND MATERIA MEDICA.

Professor SAYRE.
Professor BAILEY.
Professor HAVENHILL.
Assistant Professor EMERSON.
Assistant Professor WATSON.

1.—PHARMACEUTICAL ARITHMETIC. Three hours. A study of weights, measures, specific gravity, and the principles of pharmaceutical arithmetic. Lectures and recitations. First semester, (*a* and *b*), Monday, Wednesday, and Friday, 8 and 9. Havenhill.

2.—INTRODUCTORY PHARMACY. Two hours. The history of the Pharmacopœia and a study of the apparatus and processes employed in the preparation of medicines. Lectures and recitations. First semester, (*a* and *b*), Tuesday and Thursday, 8 to 9. Havenhill.

3.—OFFICIAL PHARMACY. Two and one-half hours' credit. A systematic study of the official preparations, including their classifications, preparation, and preservation. Must be preceded by course 2. Lectures and recitations. Second semester, (*a*), 10:15 to 11:15. Watson.

4.—GALENICAL PREPARATIONS. Five hours' credit. Practical work in the manufacture of standard medicinal preparations, as contained in the Pharmacopœia and National Formulary. Laboratory work and recitations. Must be preceded by course 2. Senior, first semester, (*a* and *b*), 3:30 to 5:30. Watson.

5.—INORGANIC MEDICINAL SALTS. Two and one-half hours' credit. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by introductory chemistry. Junior, second semester, (*b*), at 10:15. Havenhill.

6.—MATERIA MEDICA I. Two and one-half hours' credit. A critical study of the drugs and preparations of the U. S. Pharmacopœia and National Formulary. Lectures and recitations. Junior, first semester, (*b*), 11:15 to 12:15. Sayre.

7.—ORGANIC MATERIA MEDICA AND PHARMACOLOGY. Four hours. The classification, physical description and chemical con-

stitution of the crude drugs of the pharmacopœias; their chemical and physiological properties, and therapeutic application; methods of prescribing and dispensing; the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Senior, second semester, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Sayre.

8.—TOXICOLOGY. One hour. Lectures on the sources, properties, methods for detection and antidotes for poisons. Must be preceded by fifteen hours of chemistry. Senior, second semester, Thursday, at 11:15. Bailey.

9.—THEORY AND PRACTICE OF PHARMACY AND PHARMACEUTICAL CHEMISTRY II. Two and one-half hours' credit. A critical review of the official and unofficial organic chemicals used in medicine—volatile oils, alkaloids, glucosides, and a study of the impurities, adulterations, identifications, tests, etc. Senior, second semester, (*a*), 10:15 to 11:15. Havenhill.

10.—DISPENSING. Two and one-half hours' credit. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Senior, second semester, (*a*), 3:30 to 5:30. Emerson.

11.—THESIS. Two and one-half hours' credit. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the middle of the second semester. Senior, second semester, (*b*), 1:30 to 3:30.

12.—LIBRARY WORK. Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing various topics. Second semester, (*b*), hours by appointment. Sayre.

13.—PRACTICAL EXERCISES. Two and one-half hours' credit. These will include the care of the prescription room, stock taking, etc. Must be preceded by courses 1 and 4 and pharmacognosy. By appointment. Emerson.

14.—Manufacture of artificial fruit essences and other compound ethers. Sayre.

15.—PHARMACEUTICAL JURISPRUDENCE. Relating to the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society. Hours by appointment. Higgins.

16.—INTRODUCTORY PHARMACOLOGY. Two hours. A course designed for medical students, embracing metrology, and the processes and apparatus used in the preparation of medicines, including the elements of prescription writing and a brief outline of the official preparations. The work is supplemented by practical exercises in the pharmaceutical laboratory. First semester, 3:30 to 5:30. Havenhill.

17.—LABORATORY WORK IN PHARMACOLOGY. This is an introductory course inaugurated in connection with the drug laboratory and Board of Health. It has become an absolute necessity to provide means for ascertaining the physiological action of certain unknown compounds that are placed upon the drug market. As this work requires facilities for pharmacological investigation, it will be utilized for the purpose of instruction and research in connection with the Board of Health and in connection with the University Medical and Pharmacy Schools. The students electing this work will be obliged to arrange with the Dean, or the department of physiological chemistry, for the amount and kind of work he desires to perform, then appointments for such work as is desired in connection with the course in physiological chemistry and advanced materia medica will be allowed.

PHYSICS.

Professor KESTER.

Assistant Professor STIMPSON.

1.—ELEMENTARY PHYSICS. Five hours, first semester. Lectures and recitations, Monday, Wednesday, and Friday, at 9, and two two-hour laboratory periods per week, Monday and Wednesday, from 3:30 to 5:30, or Tuesday and Thursday, from 8 to 10. Open to students of the College and of the Medical and Pharmacy Schools. This course is descriptive and experimental, and is intended for those who desire a general knowledge of the subject, and who have had no previous work in physics. Prerequisites, algebra and geometry. Stimpson.

2.—ELEMENTARY PHYSICS. Five hours, second semester. A continuation of course 1, with the same schedule. Stimpson.

Students who have received credit for entrance physics, one unit, may take either or both of the above courses and receive three-fifths of the regular credits above.

PHYSIOLOGY.

Assistant Professor CHILLINGWORTH.

1.—PHYSIOLOGY. A brief course in physiology. Two and one-half hours' credit. Lectures and recitations, with demonstrations, based upon the essential structures and functions of the human body, are supplemented twice a week by practical work in the laboratory. The treatment of emergency cases, observations on the action of drugs upon tissues, the relations of the different organs and bones to each other, and the structure of the chief tissues are some of the subjects undertaken by each student. Senior, second semester, (b), 8 to 10. Chillingworth.

PHARMACY.

Professor SAYRE.

Assistant Professor EMERSON.

For equipment, see under School of Pharmacy.

For Graduates.

100.—PHYTOCHEMISTRY (Plant Chemistry). Five hours, first or second semester. Original investigation and research work on the chemical constituents of plants, dealing especially with such constituents as exert a marked physiological action when introduced into the animal economy. Sayre and Emerson.

101.—ADVANCED COURSE IN THE CHEMISTRY OF DIGESTION. Lectures, recitation and laboratory work on the chemistry of digestion. The last half semester devoted to research work on the digestion of foodstuffs. Five hours, first semester. Sayre and Emerson.

102.—DRUG ANALYSIS. Five hours, first or second semester, by appointment. This course is arranged especially for those who are preparing to be food and drug chemists. Havenhill.

The following courses are open to advanced undergraduates:

150.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. Five hours, second semester, 1:30 to 3:30. Emerson.

151.—ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY. Sayre and Emerson.

152.—ANALYSIS OF DRUGS AND DIETETICS. Four hours, either semester. This is a companion course to food analysis (see Chemistry 10), and is arranged especially for students who desire to qualify as food and drug analysts. Sayre, Havenhill.

THE SCHOOL OF MEDICINE.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM HERBERT CARRUTH, PH. D., Vice President.

SAMUEL JAY CRUMBINE, M. D., Dean.

MERVIN TUBMAN SUDLER, PH. D., M. D., Associate Dean, and Professor of Surgery.

EDGAR HENRY SUMMERFIELD BAILEY, PH. D., Professor of Chemistry and Metallurgy.

LUCIUS ELMER SAYRE, B. S., PH. M., Professor of Pharmacy.

WILLIAM LIVESEY BURDICK, PH. D., LL. B., Professor of Law.

MARSHALL ALBERT BARBER,* A. M., Professor of Bacteriology and Pathology, and Director of the Clinical Laboratories.

JAMES NAISMITH, A. B., M. D., Professor of Physical Education.

L. D. HAVENHILL, PH. M., B. S., Professor of Pharmacy.

IDA HENRIETTA HYDE, PH. D., Professor of Physiology.

THOMAS HARRIS BOUGHTON, B. S., M. D., Professor of Bacteriology and Pathology.

JOHN SUNDWALL, PH. D., M. D., Professor of Anatomy.

LINDSAY S. MILNE, M. D., Professor of Medicine.

JOSEPH E. SAWTELL, M. D., Professor of Otorhinolaryngology.

DON CARLOS GUFFEY, A. B., M. D., Professor of Obstetrics and Gynecology.

FRANKLIN E. MURPHY, M. D., Professor of Clinical Medicine.

JACOB BLOCK, M. D., Professor of Genito-urinary Diseases.

JOHN WALTER PERKINS, A. B., M. D., Professor of Surgical Diagnosis.

* On leave of absence.

- ISADORE JULIUS WOLF, M. D., Professor of Internal Medicine.
- CLARENCE CASE GODDARD, M. D., Professor of Neurology.
- S. S. GLASSCOCK, M. D., Professor of Psychiatry.
- GEORGE M. GRAY, M. D., Professor of Clinical Surgery.
- HENRY O. HANAWALT, M. D., Professor of Neurology.
- DAVID RITTENHOUSE PORTER, M. D., Professor Emeritus of Internal Medicine, and Lecturer on Life Insurance.
- LYMAN L. UHLS, M. D., Professor of Psychiatry.
- ZACHARIAH NASON, M. D., Clinical Professor of Obstetrics.
- CHARLES J. LIDIKAY, M. D., Professor of Clinical Ophthalmology.
- JAMES W. MAY, M. D., Professor of Clinical Ophthalmology.
- WILLIAM KIRK TRIMBLE, M. D., Associate Professor of Clinical Microscopy and Pathology.
- ARTHUR E. HERTZLER, M. D., PH. D., Associate Professor of Surgery. (Surgical Pathology.)
- ANDREW L. SKOOG, M. D., Associate Professor of Neurology.
- WALTER S. SUTTON, A. M., M. D., Associate Professor of Surgery.
- WILLIAM L. MCBRIDE, M. D., Associate Professor of Dermatology.
- RICHARD L. SUTTON, M. D., Associate Professor of Dermatology.
- WILLIAM F. KUHN, A. M., M. D., Adjunct Professor and Lecturer.
- HARRY LESLIE CHAMBERS, M. D., Adjunct Professor of Hygiene.
- FRANK BURNETT DAINS, PH. D., Associate Professor of Chemistry.
- JESSE E. HUNT, M. D., Assistant Professor of Pediatrics.
- HERBERT WILLIAM EMERSON, PH. C., B. S., Assistant Professor of Physiological Chemistry.
- WILLIAM JACOB BAUMGARTNER, A. M., Assistant Professor of Zoölogy and Histology.
- FELIX P. CHILLINGWORTH, M. D., Assistant Professor of Physiology.
- W. R. B. ROBERTSON, A. M., Assistant Professor of Zoölogy.

JOHN G. HAYDEN, B. S., 1902, M. D., Assistant Professor of Surgery.

RUSSELL A. ROBERTS, A. M., M. D., Assistant Professor of Rectal Surgery.

EDWARD PARK HALL, M. D., Assistant in Rhinolaryngology.

PETER THOMAS BOHAN, M. D., Instructor in Internal Medicine.

CLARENCE B. FRANCISCO, M. D., Instructor in Orthopedic Surgery.

CLIFFORD C. NESSELRODE, M. D., Instructor in Surgery.

LOGAN CLENDENING, M. D., Instructor in Medicine.

ROBERT DOUGLAS IRLAND, M. D., Instructor in Obstetrics.

EUGENE SMITH, M. D., Demonstrator in Anatomy.

WM. W. DUKE, M. D., Instructor in Internal Medicine.

EDWARD T. GIBSON, M. D., Clinical Assistant in Surgery.

JOSEPH B. COWHERD, M. D., Clinical Assistant in Medicine.

HOWARD G. NORTON, M. D., Clinical Assistant in Pediatrics.

LESTELLA E. BECHTEL, R. N., Superintendent Bell Memorial Hospital.

ORGANIZATION AND PURPOSES.

HISTORY.

In the act of the legislature establishing the University in 1862 the founding of a Medical School was contemplated, but conditions were such that it was impossible to carry out these plans at this time. Some steps were taken, as opportunity offered, to further the formation of a Medical School, and in 1880 the "Preparatory Medical Course," under the administration of the College, was established. This continued until 1899, when the School of Medicine was definitely organized, and the first two years of medical instruction was offered.

In the fall of 1905, the Kansas City Medical College (founded in 1869), the Medicochirurgical College (founded in 1896), and the College of Physicians and Surgeons (founded in 1893), were merged into the last two years of a four-year medical course under direction of the University of Kansas. This was made possible through a gift to the University of some tracts of land in and about Rosedale, Kan., by Dr. Simeon B. Bell, in memory of his wife, Eleanor Taylor Bell. The work was first given in the laboratory and lecture rooms of the building which had formerly belonged to the College of Physicians and Surgeons (Kansas City, Kan.), and a dispensary was conducted in the building of the Medicochirurgical College (Kansas City, Mo.). In January, 1907, the school was moved to the new buildings which had been erected in Rosedale, on the land above referred to.

ORGANIZATION.

THE FACULTY.

The Faculty of the School of Medicine includes members who give instruction in the work of the first and second years at Lawrence, and those giving instruction in the work of the third and fourth years at Rosedale.

THE COUNCIL.

The Council of the School of Medicine has charge of matters affecting the School as a whole, subject to the rules of the Board of Regents. It is made up of the Chancellor of the University, as chairman, the Dean, the Associate Dean, professors and associate professors from Lawrence and Rosedale.

THE ADMINISTRATIVE COMMITTEE.

Owing to the difficulty and inconvenience in getting the entire Faculty together to act on various matters in the work of the last two years, the representatives appointed to the Council from Rosedale or Lawrence, together with the Dean and Associate

Dean, compose an Administrative Committee at each place. This committee considers requests, petitions, and executive matters not specifically provided for in the regulations of the School, and administers the regulations of the Faculty and the Council.

THE WORK AT LAWRENCE.

The work of the first year and a half is given at Lawrence. It consists of the fundamental scientific branches, anatomy, histology, embryology, physiology, pathology, chemistry, bacteriology, etc., which are given in the well-equipped University laboratories. Medical students have all the advantages of libraries, museums and lectures that are to be found in a large educational institution.

Students should matriculate and register for the first year and a half at Lawrence.

THE WORK AT ROSEDALE.

The work of the last half of the second year and the third and fourth years is largely intended to familiarize the student with the various manifestations of diseases and their treatment. Much of the work is done by the bedside; and the student has an opportunity to observe all the processes of making a diagnosis and prescribing the treatment, and, in fact, to follow the case through its entire stay in the hospital.

REQUIREMENTS FOR ADMISSION.

The requirements for entrance to the Medical School include two years of approved college work, equivalent to the first two years' work leading to the bachelor's degree in this University.

There are two methods of admission to the School of Medicine: First, by examination; second, by certificate.

1. BY EXAMINATION.

Students who can not present certificates from accredited colleges will be examined in the subjects required for admission, at the University, Lawrence, May 23, 24, 25, or September 18, 19, 20. Subjects upon which the candidate will be examined are given below.

2. BY CERTIFICATE.

A certificate from an accredited college granting the degree of bachelor of arts or of science, stating that the applicant has completed two years of the required work for this degree, including general chemistry, will be accepted without examination. Graduates from state normal schools and academies not granting a degree will be accepted, provided the work completed is sufficient to admit them to the Junior class of the College of Liberal Arts and Sciences of the University of Kansas. Graduates of state normal schools outside of the state of Kansas, whose credits are accepted by another state university, may be admitted under the same conditions.

The student who has completed the first two years of college work in another school, and who desires to enter the Medical School, should send a certified transcript of his work to the chairman of the advanced standing committee, or the Registrar of the University. A rating will then be given on this work, showing under just what conditions he will be accepted by the School of Medicine.

A student may be conditioned in six hours' work, which amount can be completed in the following session of the Summer School, but this condition must be removed before entering upon the second year's work in the Medical School.

For the high-school units required to enter the College, see page 112. Below will be found a representative course in the College of Liberal Arts and Sciences in the University of Kansas.

During the high-school or the two years' college work the student should have completed the amount of work given in the list of subjects below:

Subject.	Equivalent to courses in K. U. College of Liberal Arts and Sciences.	Number hours considered necessary.	Number hours considered advisable.
German	Nos. 1, 2 and 3	20	20
French	1 and 2	..	15
Physics	1	5	10
Chemistry	1 and 3	10	15
Zoölogy	1	5	10

Organic chemistry should be completed before entering the Medical School.

OPTIONAL WORK.

According to the needs and college requirements of the individual student as determined by consultation with the Dean of the Medical School or his representative.

Language. History. Economics. Psychology.

The courses here outlined summarize the subjects and the amount of work that is desirable for the prospective student of medicine to complete while in the College. As practically every student will have had physics, chemistry or German in the preparatory schools, *the schedule in the College should be modified to suit the needs of the individual.* A student who has completed a course of chemistry equivalent to course 1 is advised to take French in its place in the first term of the first year and to take a five-hour course in organic chemistry in the Sophomore year. One who enters with three credits in German should take French in its place in the first and second terms of the Freshman year. A student with a course of satisfactory high-school physics should substitute courses in language or history. In the Sophomore year *chemistry is advised only if the student has taken at least twenty hours of German*, either in the preparatory course or in the College.

In order to obtain a reading knowledge of scientific French it is necessary for the average student to complete at least ten hours' work, and fifteen hours' work is desirable. In order to ob-

tain a reading knowledge of German about twenty hours' work is required, which necessitates the study of German for at least two years. Three years of some language (preferably Latin) should be taken in the high school as a preparation for the study of German and French.

The student is advised that the important subjects are chemistry, equivalent to courses 1 (general chemistry) and 3 (organic chemistry); zoölogy, equivalent to courses 1 and 3; physics, equivalent to courses 1 and 2, and a reading knowledge of French and German, German being the most desirable.

As every student will have from five to fifteen hours of optional work and still comply with these requirements, the course can be adapted to the needs of the student, and advice will be gladly given to those arranging to take this work. In general, courses in language, history, economics and psychology are advised for these extra periods, in order to give the student as broad a foundation as possible preparatory to the technical studies which follow in the Medical School. Every prospective medical student is urged to consult the Associate Dean or the Secretary of the School of Medicine in regard to this preparatory work.

CHANGE IN THE REQUIREMENTS FOR ENTRANCE.

Beginning with September, 1914, all students admitted to the School of Medicine will be required to have completed as a part of the sixty hours (two years) of college work the following number of hours' work in the following list of subjects:

	Lectures or recitations.	Laboratory.	Total hours.
Physics	4	4	8
Chemistry	4	4	8
Biology	4	4	8
German or French.....	8	..	8

ADVANCED STANDING.

Advanced standing in the first and second years of the course is granted to students who have completed this work in acceptable schools upon examination in those subjects for which credit is desired.

Candidates desiring such advanced standing must submit in detail a schedule of the work done by them and for which they wish credit; such schedules to be signed by the instructor in each subject or by an officer of the institution in which work was done. The last year's work must be done in this institution.

FEES IN THE FIRST AND SECOND YEARS.

Matriculation fee, for residents of the state	\$5.00
for nonresidents	10.00
Incidental fee, for residents of the state	25.00
for nonresidents	35.00
Diploma fee, at graduation	5.00

Since September, 1909, two years of approved College work are required for admission to the School of Medicine. During the first year of the regular four-year course in medicine students may register in both the School of Medicine and the College of Liberal Arts and Sciences, and may pay the College incidental fee for the first year so long as their work is confined to courses offered in the College and taken with the expectation of using the credits for the degree of A. B. also.

Laboratory fees, to cover cost of material used, will be charged by the different departments. The amount of these fees will average about as follows: Anatomy, \$3.75 per part; physiology, \$10; histology, \$2.50; embryology, \$1.50; chemistry, \$5 to \$8; physiological chemistry, \$3; bacteriology, \$2.50; pathology, \$2; making the total amount about \$60 per year for residents of Kansas, and about \$80 for nonresidents.

All laboratory fees must be paid within ten days of the beginning of the semester's work.

FEES IN THE THIRD AND FOURTH YEARS.

Students who register in the departments at Rosedale, not having been previously enrolled as students of the University of Kansas, are required to pay the regular matriculation fee—for residents of Kansas, \$5; for nonresidents, \$10.

In addition each student pays \$100 for each school year, \$50 at the opening of each semester. This amount includes the incidental fees of \$25 and \$35 per annum required by law, and fees to meet, in part, the necessary hospital and clinical expenses.

Students will also be required to pay the actual cost of materials and apparatus of every kind consumed, wasted, lost or broken. A stock room is provided where students may purchase any additional material needed, or they may secure the same, if they prefer, in the open market, provided the form and grade of such articles are approved by the instructor in charge.

REGISTRATION AND ENROLLMENT.

The exacting nature of the work in the Medical School makes it necessary for students to enter their classes promptly. Enrollment should therefore be secured within the first week of each semester. Students may enter later only for good reasons, and in such case the Associate Dean will limit the amount of work of such students at his discretion.

EXAMINATIONS.

Examinations will be held for all students during the last days of each course. Final examinations occur during the last week of each term.

Failures must be made good at the earliest opportunity. If not removed before the recurrence of the courses, the work must be taken in class.

Failure in more than a third of the student's work severs his connection with the University. He may be reinstated only by the action of the Associate Dean or the Administrative Committee.

DEGREES.

Two degrees are open to students in the School of Medicine:

The degree of doctor of medicine is granted to those satisfactorily completing the work of the full four-year medical course.

The degrees of bachelor of arts and doctor of medicine are conferred upon those completing the full six-year course in the College of Liberal Arts and Sciences and the School of Medicine, as described in the catalogue of the College.

AMOUNT OF WORK.

It is not advisable to attempt to carry full work in the Medical School and to engage in outside occupations. If it is necessary for students to earn a portion of their expenses while in school, a longer time will be required to complete the course. Should students for any reason be unable to carry full work, they may, at the discretion of the Associate Dean, be withdrawn from certain courses.

PROGRAM OF STUDIES.

Six years' work is required of all students, including the Freshman and Sophomore work in the College. For entrance requirements, and those relating to the prescribed work of the Freshman and Sophomore work, see other pages of this catalogue.

Registration will be secured in the College for the first three years, and during the fourth year in the Medical School. *In order to obtain the degree of doctor of medicine it is necessary for all students to be regularly enrolled in the School of Medicine for at least four full years.* At the end of the fourth year, on completion of all requirements of the College, the College will grant the degree of bachelor of arts. Upon the completion of this work the student will enroll in the courses of the third and fourth years of the Medical School, and may receive the degree of doctor of medicine when this work has been satisfactorily completed.

FOUR-YEAR PROGRAM AND GRADUATION.

In order to comply with various state laws in regard to the issuance of the license for the practice of medicine, *all students granted the medical degree must be registered as medical students for four full years.*

Before any student may be recommended for graduation he must have completed 4000 hours of work in an acceptable school of medicine, of which the last 1000 hours must have been in this School.

LABORATORIES.

For the work of the first two years of the medical course at Lawrence the scientific equipment of the University is available. The University already possessed, when the Medical School was established, well-equipped laboratories for chemistry, pharmacy, bacteriology and histology. In physiology and anatomy laboratories were provided, and the equipment increased. The

greater part of the work of the first two years is of a purely scientific character, and most of the student's time is spent in laboratories. The instruction is given by men who devote themselves entirely to teaching and are not interested in any other occupation.

Chemistry is given in the Chemistry Building, a new and commodious building, with apparatus and facilities for work in the regular courses, and also for graduate work. The laboratories for pharmacology and toxicology are in the same building. Laboratories for bacteriology, histology, embryology and pathology are in Snow Hall. The laboratories of physiology occupy the main floor of Medical Hall, and laboratories for gross anatomy are in the basement of the Museum of Natural History.

The Laboratory Building at Rosedale is of brick and stone, 50 by 100 feet, three stories in height. It contains a teaching laboratory, private laboratories for instructors, the necessary lecture rooms, morgue and specimen rooms, animal rooms, business offices, and the library. The museum contains more than one thousand specimens, preserved in Kaiserling's fluid. A sufficient number of microscopes are provided so that each student has his own equipment.

LIBRARY.

The library at Rosedale is in charge of a librarian. The files of periodicals have been carefully selected, with a view to training the student to use the best in current medical literature. There is a collection of reprints and dissertations. A carefully selected number of monographs and textbooks are added from year to year as they appear. The library at Lawrence is a part of the general library and managed as such.

HOSPITAL.

The first portion of the hospital was completed in 1906. This is a brick structure, three stories in height, 130 by 24 feet, with a central wing 30 by 40 feet. In 1911 a new hospital of modern fireproof construction was erected just west of the original building and connected with it by a corridor, making practically one building. This is 46 by 94 feet, four stories in height, and contains accommodations on the upper three floors for fifty patients. The hospital office, visitors' reception room, operating rooms, nurses' rooms, nurses' sitting room and dining room, dining room for the staff, etc., are in this building. There are accommodations for about sixty-five patients. There are eight rooms for private patients. Clinical material is furnished, first, by free patients (maintained by a legislative appropriation) who are sent in from the dispensary or by the heads of the departments; second, by county cases which are sent in under the laws passed by the legislature permitting counties to send their charity cases to this hospital for treatment, the counties paying the actual expenses incurred; third, patients who can afford to pay hospital fees are admitted as clinical patients if they pre-

sent a letter from their family physician stating that they can not afford to pay for professional services and are worthy of receiving free treatment.

OUT-PATIENT DEPARTMENT.

One-half of the first floor of the new hospital building is used for the dispensary. A drug room is maintained under the direction of the School of Pharmacy, and patients are treated daily, except Sunday, from 2 to 4 P. M. This gives the student a good opportunity to observe and study ambulant cases. Laboratory facilities are provided close at hand, and thorough work is emphasized.

INTERNES.

Three internes are appointed out of every graduating class to serve in the hospital. The work is arranged so as to give these men experience of the greatest possible value. The internes are selected by the Administrative Committee, from the five applicants who have made the highest average in their work during the last two years.

INSTRUCTION GIVEN ELSEWHERE.

Instruction is also given at St. Margaret's Hospital of Kansas City, Kan., by permission of the Sisters who control this institution. Its capacity is three hundred beds. Third- and fourth-year students spend two mornings a week in this hospital. The school is allowed similar privileges by the authorities of Mercy Hospital, where instruction in pediatrics is given. Instruction in contagious diseases is given at the General Hospital of Kansas City, Mo.

FIRST-YEAR SCHEDULE.

First term:

Anatomy, daily, 8 to 12:15.
Organic Chemistry, M., W., F., 1:30 to 2:30.
Organic Chemistry, laboratory work, Tu., Th., 1:30 to 3:30.
Histology, daily, 3:30 to 5:30.

Second term:

Anatomy, daily, 8 to 11:15.
Physiology, M., W., F., 11:15 to 12:15.
Physiological Chemistry, M., W., F., 1:30 to 4:30.
Physiological Chemistry, Tu., Th., 1:30 to 2:30.
Embryology, Tu., Th., 2:30 to 5:30.

SECOND-YEAR SCHEDULE.

First term:

Physiology, M., W., F., 8 to 11:15.
Physiology and laboratory work, Tu., Th., 8 to 11:15.
Pharmacology and materia medica, M., W., F., 11:15 to 12:15.
Bacteriology, daily, 1:30 to 3:30.
Pathological Physiology first half of term and Introductory Pharmacology second half of term, M., F., 3:30 to 5.
Pathological Physiology, Introductory Pharmacology, and lecture, Tu., 3:30 to 5.
Pathological Physiology, Introductory Pharmacology, and laboratory work, Th., 3:30 to 5:30.

Second term:

Pathology, daily, at 8.
Experimental Pharmacology, Tu., at 10 and at 1.
Anatomy (Applied), Th., at 10 and at 1.
Anæsthetics, M., at 11.
Elementary Therapeutics, W., at 11.
Toxicology, F., alternate, at 11 and at 1.
Materia Medica, F., at 11 and at 1.
Obstetrics (Physiological), M., W., at 1.
Pathology (Clinical), M., at 2.
Hygiene, W., at 2.
Medicine (Physical Diagnosis), Tu., Th., at 3.
Surgery (Minor), W., F., at 3.

THIRD-YEAR SCHEDULE.

First term:

Obstetrics (Pathological), M., S., at 9.
Surgery (Fractures and Dislocations), Tu., Th., at 9.
Surgery (Clinical), W., at 9; Th., at 11.
Dermatology, F., at 9.
Medicine, Tu., F., at 10.
Medicine (Clinical), M., Th., at 10.
Medicine (Physical Diagnosis), S., at 10.
Surgery (General), Tu., F., at 11.
Special Pathology, M., Th., 1 to 3.
Dispensary, Tu., F., 2 to 4.
Ophthalmology, W., 1 to 3.

Second term:

Gynecology, M., S., at 9.
Therapeutics, Tu., at 9.
Surgery (Clinical), W., at 9; Th., at 11.
Gynecological and Obstetrical Clinics, F., at 9.
Medicine, S., at 10; Tu., F., at 11.
Medicine (Clinical), M., Th., at 10.
Neurology, Tu., at 10; S., at 11.
Otology, M., at 11.
Pediatrics (Mercy Hospital Clinics), by sections, M., S., 1 to 3;
dispensary sections, M., S., 2 to 4.
Surgery (Regional), Tu., Th., 1 to 2.
Surgical Pathology, W., 1 to 2.
Surgical Obstetrics, F., 1 to 2.
Rhinolaryngology, Th., 2 to 3.
Hæmatology and Clinical Seriology, F., 2 to 4.

First term:

FOURTH-YEAR SCHEDULE.

Surgery (St. Margaret's Hospital), section A, M., 8 to 12; section B, Th., 8 to 11.
 Ophthalmology (St. Margaret's Hospital), section B, first half-term, M., 8 to 9.
 Neurology (St. Margaret's Hospital), section A, first half-term, Th., 8 to 9.
 Surgical Diagnosis, F., at 8.
 Dermatology (Clinical), S., at 8; M., 3 to 4.
 Surgery (Genitourinary), W., at 9.
 Gynecological and Obstetrical Clinics, F., at 9.
 Operative Surgery, Tu., at 10.
 Medical Economics, first half-term, W., at 10.
 Medicine (Dietetics), S., at 10.
 Nervous Diseases, section B, second half-term, M., 8 to 9.
 Medicine, section B, M., 9 to 12; section A, Th., 8 to 12.
 Dermatology, section A, second half-term, Th., 8 to 9.
 Psychiatry, W., S., at 11.
 Pediatrics (Mercy Hospital Clinics), section B, M., S., 1 to 3; section A, dispensary, M., 1 to 3.
 Medicine (Clinical), Tu., F., 1 to 3.
 Surgery (Regional), Th., 1 to 3.
 Neuropathology and Clinical Neurology, W., 2 to 4.
 Rhinolaryngology (Clinical), Th., 2 to 3.
 Obstetrics and Gynecology (Clinical Conference), Th., 3 to 4.

Second term:

Surgery 10 (St. Margaret's Hospital), section B, M., 8 to 12; section A, Th., 8 to 12.
 Ophthalmology (St. Margaret's Hospital), section A, first half-term, M., 8 to 9.
 Dermatology (St. Margaret's Hospital), section B, second half-term, Th., 8 to 9.
 Nervous Diseases, section A, second half-term, M., 8 to 9; section B, first half-term, Th., 8 to 9.
 Medicine, section A, M., 9 to 12; section B, Th., 9 to 12.
 Surgical Diagnosis, F., at 8.
 Surgery (Genitourinary), W., at 9.
 Surgery (Operative), F., at 9.
 Surgery (Orthopedic), S., at 9.
 Surgery II (Rectal), second half-term, W., at 10.
 Neurology I, Tu., at 11.
 Hygiene (Preventive Medicine), W., at 11.
 Medical Jurisprudence, S., at 11.
 Medicine (Clinical), Tu., F., 1 to 3.
 Contagious Diseases (General Hospital), Th., 1 to 3.
 Clinical Neurology, W., 2 to 4.
 Electives, M., at 1; Tu., at 9.

DESCRIPTION OF COURSES.

ANATOMY.

JOHN SUNDWALL, M. D., PH. D., Professor of Anatomy.

WILLIAM JACOB BAUMGARTNER, A. M., Assistant Professor of Zoölogy.

W. R. B. ROBERTSON, Assistant Professor of Zoölogy.

EUGENE SMITH, M. D., Instructor in Anatomy.

ROBERT L. HOFFMAN, Fellow in Anatomy.

The laboratories for gross anatomy and dissecting occupy rooms in the basement of the Museum of Natural History. During the last few years the equipment has been increased and more material has been provided, including dissections, osteological preparations, models, and neurological preparations. A special effort has been made to embalm the dissecting material so as to give absolutely the best result. A fee is charged each student, covering the actual cost of material consumed. Abundant material for the study of osteology is furnished. The student is expected to provide dissecting instruments and two gowns. Histology and embryology are given in laboratories in Snow Hall.

1.—DESCRIPTIVE ANATOMY. The first two weeks are occupied by a study of osteology. The vertebral column is considered from a morphological standpoint, and the various bones studied by means of drawing and modeling. The remainder of the semester is devoted to dissection of the head and neck, and study of the various preparations and models illustrating these parts. In this course the student is put on his own resources, in order to develop individuality and confidence in himself. Demonstrations to small groups are continually going on during the dissecting hours. Seven hours of college credit, first semester, daily, 8 to 12:15. Sundwall, Smith, and Hoffman.

2.—DESCRIPTIVE ANATOMY. During this term the abdomen and thorax and leg are carefully dissected and studied, and demonstrations go on as in the first semester. This course is simply a continuation of course 1. Eight hours of college credit, second semester, daily, from 8 to 12:15. Sundwall, Smith, and Hoffman.

3.—THE CENTRAL NERVOUS SYSTEM AND SENSE ORGANS. This is a study of the embryology and the gross and microscopic anatomy of the brain, cord, and sense organs. Particular attention is paid to the fundamental plan of the nervous system and to the tracts and associated nuclei. The function is also studied with special reference to the localization of lesions. Each student is furnished with an abundance of embryological material, a set of mounted sections from selected levels of the cord and brain stem, and sufficient preserved material to make a careful study of the cord and brain. A number of gross dissections are also made by each student. Four hours, second half of second semester, daily, 8 to 12:15. Sundwall and assistants.

4.—TOPOGRAPHICAL AND SURGICAL ANATOMY. (*At Rosedale.*) This is a study of topographical and surgical anatomy, with a general review of the first year's work. Students will be required to locate deep structures through small openings and give the external markings. Special stress will be placed on relations, anomalies, and their diagnostic and surgical bearing. This course is especially designed to give a vivid practical review of the first year's work and to equip the student for his clinical work for the third year. It must be completed by second-year medical students before full credit can be given for anatomy. Four hours of college credit, daily, last half of second semester, from 8 to 11:15. Sundwall.

5.—OPTIONAL WORK FOR ADVANCED STUDENTS. This work is done individually, and is arranged to suit the needs and the ability of the student. In a large measure, it will consist of a study of cross-sections, special dissections, and preparation of anatomical material. Sundwall.

6.—HISTOLOGY, OR MICROSCOPICAL ANATOMY. Microscopical manipulation, the study of normal tissues, and the methods of preparing mounted objects are required in this course. Lectures and laboratory work. Required of first-year medical students. Five hours of college credit, first semester, daily, 3:30 to 5:30. Baumgartner.

7.—EMBRYOLOGY. General principles of embryology, with special reference to the needs of students of anatomy and of medicine. Particular stress is laid upon the anatomy of the mammalian embryo and upon the structure and development of the foetal membranes and placenta. Lectures, laboratory work, and quizzes. Two hours of college credit, second semester, 3:30 to 5:30. Robertson.

8.—SEMINAR. A limited number of students can by special arrangements be admitted to a seminar in which subjects of current interest in anatomy will be discussed. Prerequisites, anatomy 1 to 7, inclusive, and reading knowledge of French and German. Sundwall.

TOTAL HOURS OF INSTRUCTION, 1045. Gross anatomy 567, Neurology 190, Histology 180, Embryology 108.

OPTIONAL COURSES.

PROTOZOÖLOGY. A course in the structure and life history of unicellular animals and lower worms, with special attention to their relation to disease and parasitism. Optional for first-year or second-year medical students. Two hours, first term, 8 to 10. Nowlin.

BACTERIOLOGY AND PATHOLOGY.

THOMAS HARRIS BOUGHTON, B. S., M. D., Professor of Bacteriology and Pathology.
WILLIAM KIRK TRIMBLE, M. D., Associate Professor of Pathology, and Laboratory
Diagnosis.

HARRY LESLIE CHAMBERS, M. S., M. D., Lecturer on Pathological Physiology and Hygiene.

1.—BACTERIOLOGY. (*At Lawrence.*) Lectures, laboratory, and recitations. This course is designed to give the student a comprehensive view of bacteriology, special emphasis, however, being placed on its medical aspects. The more common pathogenic organisms are studied with reference to their morphologic, cultural and staining characteristics, their relations to the problems of hygiene, sanitation, and immunity, and the standard methods of identifying them. The student also learns the commoner routine laboratory procedures, such as the preparation of culture media, the obtaining of pure cultures, counting colonies, etc. This course includes also a discussion of immunity. Required of second-year students. Five hours, first term, 1:30 to 3:30. Boughton and assistants.

2.—PATHOLOGICAL PHYSIOLOGY. (*At Lawrence.*) This is a course of lectures and recitations covering the principles of diagnosis, and placing special emphasis on derangements of function. It strives to make the transition from the study of normal physiology to that of clinical physiology and pathology easy and satisfactory. The course bears the same relation to normal physiology that cellular pathology does to normal histology and anatomy, and is intended to give a rational understanding of the symptoms that are later studied at the bedside. Considerable attention is given to the various compensations, adaptations and regenerations that occur in the individual in the attempt to master disease. Required of second-year students. Three hours, first semester, Monday, Wednesday, and Friday, 3:30 to 4:30. Chambers.

3.—GENERAL PATHOLOGY. (*At Rosedale.*) Lectures, laboratory, and recitations. This course is devoted to the study of pathological processes, with especial emphasis on the manner in which lesions are produced, considerable time also being devoted to pathological technique. Five hours, second term, Monday, Wednesday, and Friday, 8 to 11, and Tuesday and Thursday, 8 to 10. Required of second-year students. Boughton and assistants.

4.—SPECIAL PATHOLOGY. (*At Rosedale.*) Recitations and laboratory. This course takes up the study of special pathology, as illustrated by gross and microscopic specimens. Required of third-year students. Three hours, first term, Monday and Wednesday, 1 to 4. Trimble.

5.—POST-MORTEM PATHOLOGY. (*At Rosedale.*) Assigned work. Each student is required to see a minimum of twenty autopsies during his third year. Three hours; first and second terms. Boughton and Trimble.

6.—ADVANCED BACTERIOLOGY AND PATHOLOGY. (*At either Lawrence or Rosedale.*) Open to advanced students who have

had sufficient preparation. Experimental work and original research in all branches of bacteriology, pathology and immunology, arranged to suit the needs of individual students. Boughton.

7. **HYGIENE.** (*At Lawrence.*) This is a course in hygiene from the viewpoint of the medical practitioner. Besides the usual work in hygiene, there is instruction in making vital statistics, in quarantine regulations, and in fumigation and other modes of disinfection. Committees from the class will investigate and report on water and milk supplies, the care and marketing of meats, fruits, vegetables, etc., and on various systems for heating, ventilating and cleaning. First term. Chambers.

TOTAL HOURS OF REQUIRED WORK, 562. Medical bacteriology, 180, General pathology 234, Special pathology 108, *Post-mortem* Pathology 40.

CHEMISTRY.

EDGAR HENRY SUMMERFIELD BAILEY, PH. B., PH. D., Professor of Chemistry, and Head of the Department.

LUCIUS ELMER SAYRE, B. S., PH. G., Professor of Materia Medica and Pharmacology.

FRANK BURNETT DAINS, PH. B., PH. D., Associate Professor of Chemistry.

HERBERT WILLIAM EMERSON, PH. C., B. S., Assistant Professor of Physiological Chemistry.

13.—**ORGANIC CHEMISTRY.** Lectures, recitations and laboratory. A general introductory course in organic chemistry, covering the most important classes of organic compounds, with their preparation, properties and uses. First term, Monday, Wednesday, and Friday, 1:30 to 2:30. Required of students who have not completed it in the preliminary college work. Laboratory, Tuesday and Thursday, 1:30 to 3:30. Five hours of college credit. Dains and assistants.

10.—**PHYSIOLOGICAL AND MEDICAL CHEMISTRY.** This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and studied in detail. Attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and laboratory work. Required of first-year students. Text: Hawk's Physiological Chemistry. Five hours of college credit, second term, 1:30 to 3:30. Sayre and Emerson.

4.—**ADVANCED WORK IN PHYSIOLOGICAL CHEMISTRY.** The advanced study of any special branch of chemical physiology tending toward original work. Open to students having had general, qualitative, quantitative, organic and physiological chemistry. Either or both semesters, by appointment. Sayre and Emerson.

TOTAL HOURS OF INSTRUCTION, 485. Organic chemistry 125, Lectures and recitations 54, Laboratory work 108, Physiological chemistry 198.

PHARMACOLOGY, THERAPEUTICS, AND TOXICOLOGY.

LUCIUS ELMER SAYRE, B. S., PH. G., PH. M., Professor of Pharmacy.

L. D. HAVENHILL, PH. C., B. S., Professor of Pharmacy.

EDGAR HENRY SUMMERFIELD BAILEY, PH. B., PH. D., Professor of Chemistry and Metallurgy.

HERBERT WILLIAM EMERSON, B. S., PH. C., Assistant Professor of Pharmacy.

The courses offered in this department are especially designed to meet the requirements of medical students, special emphasis being given to the properties, action and uses of the more important medical agents and poisons.

1.—INTRODUCTORY PHARMACOLOGY. (*At Lawrence.*) This course embraces the study of weights, measures, processes used in the preparation of medicines, illustrated by exercises in the pharmaceutical laboratory; prescription writing; and physical properties and identification of crude drugs. Four hours, one-half of first term, Monday, Tuesday, Thursday, and Friday, 2:30 to 5:30. Havenhill.

2.—PHARMACOLOGY AND MATERIA MEDICA. (*At Lawrence.*) Classification, chemical and physical properties of drugs, therapeutical application, method of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Required of second-year students. Must be preceded by course 1. Three hours, first term, at 11:15. Sayre.

3.—PHARMACOLOGY AND MATERIA MEDICA. (*At Rosedale.*) A continuation of course 2. One hour, second term, Friday, at 11. Sayre.

4.—LABORATORY WORK IN PHARMACOLOGY. (*At Lawrence.*) Investigation of the physiological action of drugs, and chemical analysis of active (toxic) principles of drugs. By special appointment with the Dean, and Department of Physiological Chemistry, the kind and amount of such work to be arranged for.

Note.—The facilities for pharmaceutical investigation of a practical character are made necessary by the intimate connection of the drug laboratories with the State Board of Health. Sayre and Emerson.

5. TOXICOLOGY. (*At Rosedale.*) Lectures on the sources, properties, methods for detection, and antidotes for poisons. One hour, second term. Bailey.

TOTAL HOURS OF INSTRUCTION, 144. Introductory pharmacology 54, Materia medica 72, Toxicology 18.

PHYSIOLOGY AND EXPERIMENTAL PHARMACOLOGY.

IDA HENRIETTA, HYDE, B. S., PH. D., Professor of Physiology.

FELIX P. CHILLINGWORTH, M. D., Assistant Professor of Physiology.

The physiological department is equipped with modern apparatus for demonstration and experimental work.

The medical laboratory is equipped with specially planned

tables, that have gas, water and electrical connections. Each table is supplied with apparatus, sufficient for investigation and experimentation. Two students are assigned to each table.

The research room is fitted up with the necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is a department library conveniently situated.

PHYSIOLOGY I. Three hours, Monday, Wednesday, Friday, 11:15 to 12:15, second semester. Recitations and demonstrations. Physiology of digestion, secretion, excretion, nutrition, heat production, blood and circulation. Required of first-year medical students.

PHYSIOLOGY II. Continuation of course I. Seven hours, first semester, Monday, Wednesday, Friday. Recitations, demonstrations and journal club, at 9. Laboratory, Tuesday and Thursday, 8 to 12:15. Physiology of muscle and nerve, central nervous system, special senses and respiration. Required of the second-year medical students. Chillingworth.

EXPERIMENTAL PHARMACOLOGY. The physiological action of a selected list of drugs and poisons on mammals is considered in the laboratory. Each laboratory period is preceded by a brief lecture or recitation bearing on the significance of the experiment in hand. Hours to be arranged. Two laboratory periods and two lectures each week. Chillingworth.

TOTAL HOURS OF INSTRUCTION, 380. Lectures and recitations 110, Laboratory work 190, Experimental pharmacology 80.

Medical Division.

LINDSAY S. MILNE, M. D., Professor of Medicine, and head of the department.

FRANKLIN E. MURPHY, M. D., Professor of Clinical Medicine.

ISADORE JULIUS WOLF, M. D., Professor of Diseases of the Stomach and Intestines, and Dietetics.

WILLIAM KIRK TRIMBLE, M. D., Associate Professor of Clinical Pathology.

JESSE E. HUNT, M. D., Associate Professor of Pediatrics and Contagious Diseases.

RICHARD L. SUTTON, M. D., Associate Professor of Dermatology.

WILLIAM L. MCBRIDE, M. D., Associate Professor of Dermatology.

S. S. GLASSCOCK, M. D., Professor of Psychiatry.

LYMAN L. UHLS, M. D., Clinical Professor of Psychiatry.

HENRY O. HANAWALT, M. D., Professor of Neurology.

W. F. KUHN, M. D., Professor of Neurology.

CLARENCE CASE GODDARD, M. D., Professor of Neurology.

ANDREW L. SKOOG, M. D., Associate Professor of Clinical Neurology and Neuropathology.

PETER THOMAS BOHAN, M. D., Instructor in Clinical Medicine and Therapeutics.

LOGAN CLENDENING, M. D., Instructor in Physical Diagnosis.

WILLIAM W. DUKE, M. D., Instructor in Therapeutics.

JOSEPH B. COWHERD, M. D., Clinical Assistant in Internal Medicine.

EDWARD T. GIBSON, H. M., M. D., Clinical Assistant in Internal Medicine.

HOWARD G. NORTON, M. D., Clinical Assistant in Pediatrics.

The course in medicine begins in the second half of the second year and leads up to the individual study of clinical cases in the fourth year.

SECOND YEAR.

1.—PHYSICAL DIAGNOSIS. The course consists of demonstrations and practical exercises illustrating the simpler methods of physical examination of the normal organs, with exposition of the physical laws involved. It includes also instruction in the recording of clinical cases. Demonstrations are also conducted in the dispensary and in the hospital for the practical study of physical signs of diseased conditions. Tuesday and Thursday, 3 to 4. Clendenning.

2.—LABORATORY DIAGNOSIS. In this class students are trained in the methods of examining blood, sputum, and throat secretions, gastric contents, cerebrospinal fluids, urine, feces, pathological exudates, etc. Monday, 2 to 4. Trimble.

3.—ELEMENTARY THERAPEUTICS. The pharmacological actions of the drugs more commonly used in medicine are discussed in relation to their application in therapeutics. Instruction is also given in the methods of administration of these remedies and in the writing of prescriptions. Wednesday, 11 to 12. Duke.

THIRD YEAR.

4.—SYSTEMATIC MEDICINE. A systematic course of lectures is given on the diseases of the cardiovascular and respiratory systems, the peritoneum, liver, kidney, adrenals, thyroid, pancreas, and disorders of metabolism. Tuesday and Thursday, 10 to 11, first term; 11 to 12, second term. Milne.

5.—CLINICAL MEDICINE. Ward classes are held twice a week, in which cases are demonstrated, as far as possible, to illustrate the subjects of the lecture course at that time. Monday and Thursday, 10 to 12. Murphy.

Ward Work. Students are assigned to cases for individual study, and are required to prepare records of these cases and to note the progress and treatment of the disease.

6.—CLINICAL BACTERIOLOGY AND SEROLOGY AND HÆMATOLOGY. In this course instruction is given in agglutinative and other serum tests, including the Widal and Wassermann reactions, the bacteriology of pathological exudates, blood cultures, vaccine therapy and diseases of the blood. Second term, Friday, 2 to 4. Trimble.

7.—PHYSICAL DIAGNOSIS. This is a continuation of course 1, but is chiefly devoted to the study of the physical signs of diseased conditions and the mechanism by which they are produced. These exercises are conducted at the bedside, in the hospital, or dispensary. First term, Saturday, 10 to 12. Clendenning.

8.—DISEASES OF THE STOMACH AND INTESTINES. A systematic lecture course on diseases of the stomach and intestines. Second term, Saturday, 10 to 11. Wolf.

9.—THERAPEUTICS. A lecture course, including the pharmacal and nonpharmacal therapy of diseased conditions. Second term, Tuesday, 9 to 10. Bohan.

FOURTH YEAR.

10.—CLINICAL MEDICINE. Clinics are given at the bedside on selected cases. Each of these cases has previously been studied by one student, who is responsible for the history of this case and for a special knowledge of this type of disease. Both terms, Tuesday and Friday, 1 to 3. Milne.

11.—CLINICAL MEDICINE. A similar course to 10. Both terms, Monday and Tuesday, in sections, 9 to 12. St. Margaret's Hospital. Bohan.

12.—DIETETICS. A lecture course on the dietetic treatment of disease. First term, Saturday, 10 to 11. Wolf.

13.—CONTAGIOUS DISEASES. A demonstration course of the various infectious diseases. Second term, Thursday, 1 to 3, City Hospital. Hunt.

14.—HYGIENE AND PREVENTIVE MEDICINE. A course of lectures on the widest application of medicine, including vital statistics, commercial aspects of food and drugs, water supply and infectious diseases. One hour, second term. Crumline, and assistants.

15.—OUT-PATIENT WORK. Assignments are also made to the different dispensary rooms. Each case is allotted to a student, whose duty is to prepare the history and to examine the patient, under the direction of the physician in charge, who advises the treatment to be carried out in each case.

DERMATOLOGY.

THIRD YEAR.

1.—INTRODUCTORY COURSE. One hour. Lectures and recitations. The anatomy and physiology of the skin, together with the symptomatology, pathology and clinical manifestations of the commoner skin diseases. Required of Juniors, second semester, Saturday, at 9. McBride.

FOURTH YEAR.

2.—CLINICAL DERMATOLOGY. One hour. Lectures and demonstrations of the various skin diseases, at the Bell Memorial and St. Margaret's hospitals twice a week, Thursday and Saturday forenoons. Both terms, Senior year. McBride and Sutton.

MEDICAL ECONOMICS.

Professor W. L. BURDICK.
Dr. DAVID R. PORTER.
Dr. CLAY E. COBURN.

Under this head instruction is given to the fourth-year students in the rights and privileges of the physician, and in matters relating to expert testimony, malpractice, ethics, medical organization and life insurance.

1.—MEDICAL JURISPRUDENCE. One hour, second semester, Saturday, at 10. Lectures. Required of fourth-year students. Burdick.

2.—LIFE INSURANCE. One-half hour, first semester, Wednesday, at 3. Lectures and practical exercises. Required of fourth-year students. Porter.

PSYCHIATRY AND NEUROLOGY.

THIRD AND FOURTH YEARS.

* 1.—FUNCTIONAL AND ORGANIC DISEASES OF THE NERVOUS SYSTEM. Lectures. Required of third-year students. Two hours, second term; Monday and Friday, at 10. Goddard and Hanawalt.

2.—PSYCHIATRY. Lectures covering the following subjects are given: History of insanity, forms of insanity, care and treatment of insanity in hospitals, care and treatment of insanity in general practice, state care of insane, and the relation of heredity to insanity. First term, Wednesday and Saturday, 10 to 11. Glasscock and Uhls.

3.—CLINICAL NEUROLOGY AND NEUROPATHOLOGY. This course includes practical exercises and demonstrations on the pathology of nervous diseases. Clinical demonstrations of neurological cases are also conducted, and students are assigned to the practical study of the nervous cases in hospital, to be reported on at the class meetings. Both terms, Wednesday, 2 to 4. Skoog.

4.—(a) DRUG HABITS; (b) SOCIOLOGIC AND ECONOMIC ASPECTS OF PSYCHIATRY. Elective lectures. Only those who have had some instruction in psychiatry are admitted to this course. One hour, second term, Thursday, at 11.

PEDIATRICS.

THIRD YEAR.

1.—PEDIATRICS. Students are shown children from birth to fifteen years of age, with special reference to the physical examination and diagnosis and diseases of children. In sections limited to six students in the wards of Mercy Hospital. Second term, two hours weekly. Hunt.

FOURTH YEAR.

2.—PEDIATRICS. Continuation of course 1. Cases are assigned to students for examination and study, to be reported on at the next class meeting. Differential diagnosis and treatment are particularly emphasized, and the methods of infant feeding are demonstrated. First term, Mercy Hospital; sections limited to six students; two hours weekly. Hunt.

TOTAL HOURS OF INSTRUCTION (exclusive of hospital and dispensary work), 895. Systematic medicine 102, Medical clinics 306, Neurology 50, Neurology clinics 85, Psychiatry 36, Clinical pathology (laboratory diagnosis, clinical Bacteriology, Serology, Halmatology) 64, Therapeutics 32, Pediatrics 68, Contagious diseases 32, Physical diagnosis 68, Dermatology 52.

Surgical Division.

MERVIN TUBMAN SUDLER, PH. D., M. D., Professor of Surgery, and Head of the Department.

JACOB BLOCK, M. D., Professor of Genito-urinary Diseases.

JOHN WALTER PERKINS, A. B., M. D., Professor of Surgical Diagnosis.

GEORGE M. GRAY, M. D., Professor of Clinical Surgery.

JOSEPH E. SAWTELL, M. D., Professor of Otorhinolaryngology.

JAMES W. MAY, M. D., Professor of Clinical Ophthalmology.

CHARLES J. LIDIKAY, M. D., Professor of Clinical Ophthalmology.

ARTHUR E. HERTZLER, PH. D., M. D., Associate Professor of Surgery.

WALTER S. SUTTON, A. M., M. D., Associate Professor of Surgery.

HERBERT L. ALKIRE, M. D., Associate Professor of Otorhinolaryngology.

RUSSELL A. ROBERTS, A. B., M. D., Assistant Professor of Rectal Surgery.

JOHN G. HAYDEN, B. S., M. D., Assistant Professor of Surgery.

EDWARD PARK HALL, M. D., Assistant in Otorhinolaryngology.

CLIFFORD C. NESSELRODE, M. D., Instructor in Surgery.

CLARENCE B. FRANCISCO, M. D., Instructor in Orthopedic Surgery.

EDWARD THOMAS GIBSON, A. M., M. D., Assistant in Surgery.

Instruction in the principles of the various branches of surgery is given by means of lectures, recitations, and assigned subjects. Clinical instruction is given in the dispensary, in the Bell Memorial Hospital, and in St. Margaret's Hospital.

SECOND YEAR.

1.—ANESTHETICS. One hour for nine weeks during the second term. Lectures and assigned reading. Required of second-year students. Monday, at 11. Sudler.

2.—MINOR SURGERY. Instruction in bandaging and dressings, at the dispensary. Required of second-year students. Second term, two hours. Sutton.

THIRD YEAR.

3.—GENERAL SURGERY. Lectures, recitations, conferences, and assigned work. An introduction to the principles underlying surgical procedure. Required of third-year students. Two hours, first term, Monday and Thursday, at 11. Sudler.

4.—REGIONAL SURGERY. A continuation of course 1. Required of third-year students. Three hours, second term. Hayden.

5.—FRACTURES AND DISLOCATIONS. Lectures and recitations. Required of third-year students. Two hours, first term, Tuesday and Thursday, at 9. Sutton.

6.—ORTHOPEDIC SURGERY. Lectures and recitations. Required of third-year students. One hour, second term, Saturday, at 9. Sutton.

7.—GENITOURINARY SURGERY. Lectures and recitations. Required of third-year students. One hour, first and second terms. Block.

8.—SURGICAL PATHOLOGY. Required of third-year students. Two hours, second term. Hertzler.

THIRD AND FOURTH YEARS.

9.—CLINICAL SURGERY. At the Bell Memorial Hospital. Required of third-year students the first term and of fourth-year students the second term. One hour, Wednesday, 9 to 12.

FOURTH YEAR.

10.—SURGICAL DIAGNOSIS. Lectures and demonstrations. Required of fourth-year students. One hour, first and second terms, Friday, at 8. Perkins.

11.—OPERATIVE SURGERY. Animal experimentation and work on the cadaver. Required of fourth-year students. Four hours, first and second terms. Sutton.

12.—SURGICAL CONFERENCES. Papers on assigned subjects. Required of fourth-year students. One hour, second term, Thursday, at 10. Sudler.

13.—RECTAL SURGERY. Lectures and demonstrations. Required of fourth-year students. One hour for nine weeks, second term. Roberts.

14.—CLINICAL SURGERY. At St. Margaret's Hospital. Required of fourth-year students. Two hours, first and second terms, Monday and Thursday, 8 to 12. Assigned in sections. Gray.

15.—CLINICAL SURGERY. Instruction in the dispensary. Required of third-year students. Two hours, second term, Monday and Thursday, at 1. Sutton.

16.—CLINICAL SURGERY. Instruction in wards at the Bell Memorial Hospital. Two hours, second term. Sudler.

RHINOLARYNGOLOGY AND OTOTOLOGY.

THIRD YEAR.

1.—RHINOLARYNGOLOGY. For this course students are taught in groups at the Bell Hospital. Beginning with a review of the anatomy and physiology of the parts, a drill in the methods of examination is given, illustrated by demonstrations on patients. Required of third-year students. One hour, second term, Thursday, at 2. Sawtell.

2.—OTOLOGY. A short review of the physiology and anatomy of the ear, with microscopical specimens and clinical cases for demonstration. Lectures on the pathological lesions of the ear. Required of third-year students. One hour, second term, Monday, at 11. Alkire.

FOURTH YEAR.

3.—RHINOLARYNGOLOGY. This course is a continuation of course 1. Here also the students are taught in groups. The subject matter of this course consists of a study of the deformities and diseases of the nose and throat. Required of fourth-year students. One hour, first term. Sawtell.

4.—CLINICAL WORK. Clinical instruction in diseases of the ear, nose and throat is given by sections in the dispensary and by hospital clinics, on Tuesdays and Thursdays. Sawtell, Hall.

OPHTHALMOLOGY.

Assistant Professor LIDIKAY.
Clinical Professor MAY.

1.—PHYSIOLOGICAL OPTICS. Instruction is given second-year students in physiological optics; vision tests, color tests, the taking of the field of vision, etc. Optical boxes, artificial eyes, ophthalmoscopes and suitable apparatus are provided for all physiological work and study. The course consists of laboratory work and demonstrations under the professor of physiology in the regular course in physiology.

2.—LECTURES, DEMONSTRATIONS AND CLINICAL LECTURES. Two hours, second semester. Required of Junior students. The course covers the methods of examining the patient, functional testing, diseases and injuries, medical and surgical ophthalmology, and the relation of the eye to general diseases. May.

3.—PRACTICAL WORK. Clinics are given in St. Margaret's and Bell Memorial hospitals. The students are divided into small sections and serve in the dispensary. Each individual has the opportunity of closely inspecting the patients suffering from external diseases of the eye, of making the commoner applications utilized in the treatment, of assisting in the operating room, of studying refractive errors, functional testing, etc. One hour, both semesters. Required of Seniors. Lidikay and May.

TOTAL HOURS OF INSTRUCTION, 838. Anesthetics 9, Minor surgery 36, General surgery 36, Regional surgery 54, Fractures and dislocations 36, Orthopedic surgery 18, Genitourinary surgery 36, Surgical pathology 54, Operative surgery 144, Surgical diagnosis 36, Surgical conferences 18, Rectal surgery 9, Clinical surgery 144, Amphitheater clinics 144, Ear, nose, and throat 16, Eye 16, Ear, nose, throat and eye, clinics 32.

Obstetrical and Gynecological Division.

DON CARLOS GUFFEY, A. M., M. D., Professor of Gynecology and Obstetrics, and Head of the Department.

ZACHARIAH NASON, M. D., Professor of Clinical Obstetrics.

ROBERT D. IRLAND, M. D., Instructor.

Instruction in the principles of obstetrics and gynecology is given by means of lectures, recitations and demonstrations. Clinical instruction is given in the dispensary and wards of the Bell Memorial and Bethany hospitals. Further practical instruction in obstetrics is obtained through the out-patient department.

SECOND YEAR.

1.—PHYSIOLOGICAL OBSTETRICS. Lectures and recitations. Required of second-year students. Two hours, second term. Monday and Wednesday, at 1. Irland.

THIRD YEAR.

2.—PATHOLOGICAL OBSTETRICS. Lectures, recitations, and demonstrations. Required of third-year students. Two hours, first term; Monday and Saturday, at 9. Guffey.

3.—DISEASES OF THE FEMALE GENITAL TRACT. Lectures, recitations, and demonstrations of illustrative pathological material. Required of third-year students. Two hours, second term, Monday and Saturday, at 9. Guffey.

4.—OPERATIVE OBSTETRICS. Recitations, demonstrations, and practice on the manikin by the student. Required of third-year students. Two hours, second term, Friday, at 1. Irland.

THIRD AND FOURTH YEARS.

5.—DISPENSARY. A minimum of eighteen hours is required. A course devoted chiefly to history taking, the technique of examinations, and the treatment of ambulatory patients. Students assigned in groups. One hour. Guffey and Irland.

6.—PRACTICAL WORK IN OBSTETRICS. The conduct of two births in a hospital and eight on the out-patient service is required before graduation. Assigned work. Guffey, Nason, and Irland.

FOURTH YEAR.

7.—CLINICAL CONFERENCE IN OBSTETRICS AND GYNECOLOGY. An exhaustive consideration of all cases in the Bell Hospital. Also, reports and discussions of case histories and important abnormalities met with in the out-patient service. Required of fourth-year students. Two hours, first and second terms, Thursday, 3 to 5. Guffey.

8.—CLINICS IN OBSTETRICS AND GYNECOLOGY. This course logically follows course 5, as the same patients are further examined, given treatments, or operated upon. Students present histories, assist with operations, and make full reports of pathological findings, operative technique, or treatment. Required of fourth-year students. Two hours, first and second terms, Friday, 9 to 11. Guffey.

TOTAL HOURS OF INSTRUCTION, 272. Gynecology: didactic 32, clinical 77, total 109. Obstetrics: didactic 86, clinical 77, total 163. Total didactic 118, clinical 154.

Training School for Nurses.

FACULTY.

FRANK STRONG, PH. D., President.
S. J. CRUMBINE, M. D., Dean School of Medicine.
M. T. SUDLER, M. D., Associate Dean, School of Medicine.
LESTELLA E. BECHTEL, R. N., Superintendent of Bell Memorial Hospital.
EMMA H. BECHTEL, R. N., Supervisor of Nurses.
WILLIAM KIRK TRIMBLE, M. D., Lecturer on Pathology.
WALTER S. SUTTON, A. B., M. D., Lecturer on Surgery.
VIRGIL MCCARTY, A. M., M. D., Instructor in Chemistry.
GUY FINNEY, A. B., M. D., Instructor in Materia Medica.
D. O. SMITH, A. B., Instructor in Medicine and Obstetrics.

This school was established in July, 1906, with the opening of the Bell Memorial Hospital. It is a department of the School of Medicine of the University of Kansas, and subject to the same governing bodies.

EQUIPMENT.

The present hospital building contains sixty-five beds. The hospital receives all classes of patients except those suffering from dangerous contagious diseases or mental troubles, and shows a great variety of work. Also, since it is a teaching hospital, the character of the work shown is more instructive than that shown ordinarily in private hospitals.

The close proximity of the laboratory, library, and other equipment of the School of Medicine affords great advantage in the way of medical information and instruction.

ADMISSION.

Women of good character between the ages of twenty and thirty are eligible for admission. Those with a high-school education are given preference. Those who are accepted are accepted with the understanding that they must spend a probationary period of three months in the school, during which time they will receive board, laundry and lodging, but no other compensation, and that they agree to remain in the school, unless dismissed, the full term of two and a half years.

The didactic instruction begins October 1 and ends June 1 of each year, but students are admitted at any time when there is a vacancy.

Any young woman who wishes to enter the school must make formal application to the superintendent of the Bell Memorial Hospital, Rosedale. With this application should be sent letters showing what educational advantages she has enjoyed, testifying to her good moral character, and to her good health. These letters should preferably be from her instructor and her medical attendant.

ADVANCED STANDING.

Candidates for advanced standing must satisfy the requirements for admission and also show that they have had the work already done by the class to which they wish admission. An official statement of character and ability from the training

school giving the previous work will be required. There will be required of them, as of beginners, a probationary period, and they will be required to pass an examination on the work for which they seek credit.

COURSE OF STUDY.

The course is for two and a half years. It is customary to grant the members of the first- and second-year classes a vacation of three weeks each year, and two weeks during the last six months.

The instruction consists of two parts—the practical and the theoretical. The practical work consists of sixty hours' work each week. The theoretical instruction requires four hours of lectures or recitations each week, together with the necessary laboratory work in dietetics, etc. This theoretical instruction includes the necessary work in anatomy, physiology, hygiene, medicine, pediatrics, obstetrics, etc.

HOURS OF INSTRUCTION.

	Juniors.	Intermediates.	Seniors.
Hygiene and nursing ethics.....	4	..	4
Theory and demonstration—nursing,	32	32	..
Anatomy and physiology.....	32	..	..
Materia medica	20	..	..
Ward solutions	2	..	..
Urinalysis .....	..	6	..
Bacteriology	16	..	..
Laboratory	6	..	..
Obstetrical and Gynecological.....	..	32	..
Chemistry	10	..	..
Pediatrics .....	..	15	..
Surgery .....	..	8	..
Bandaging .....	..	4	..
Dietetics	40	..	..
Nervous diseases .....	..	..	6
Ear, nose and throat.....	..	..	5
Eye .....	..	..	5
	<hr/> 162	<hr/> 97	<hr/> 20

PROMOTION.

Students are advanced upon the obtaining of satisfactory grades in their practical work and upon their passing satisfactory examinations in their theoretical work. Reports on the practical work are made monthly and those on the theoretical work semiannually.

GRADUATION.

At the close of a successful course of two and a half years the students are granted a diploma under the seal of the University of Kansas. Before, however, they receive such a diploma, they must make up lost time and demerits charged against them during the course.

EXPENSES IN SCHOOL FOR NURSES.

Each nurse must furnish her own uniform, books and instruments.* To cover such professional expenses each member of the training school is allowed \$7 a month. From this compensation is deducted, of course, the cost of material unnecessarily broken or lost. Since the board, lodging and necessary laundry work are furnished free, the pupil nurse secures her training at little or no expenditure of money. •

* These instruments consist of 1 hypodermic syringe (all glass), 1 bandage scissors, 1 small scissors, 1 probe, 1 thumb forceps.

THE SUMMER SESSION.

THE FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM HERBERT CARRUTH, PH. D., Vice President.

ARTHUR TAPPAN WALKER, PH. D., Director.

Instructors from Other Institutions.

THADDEUS LINCOLN BOLTON, PH. D., Professor of Psychology and Education, University of Montana.

CLARA CONKLIN, A. M., Professor of Romance Languages and Literatures, University of Nebraska.

ALEXANDER H. RICE, PH. D., Professor of Latin, Boston University.

HERMANN SCHOENFELD, PH. D., LL. D., Professor of Germanics, George Washington University.

EMIL CARL WILM, PH. D., Professor of Psychology and Education, Wells College.

Instructors from the University of Kansas.

JAMES WOODS GREEN, A. M., Professor of Law.

FRANK WILSON BLACKMAR, PH. D., Professor of Sociology.

CHARLES GRAHAM DUNLAP, LITT. D., Professor of English Literature.

EDWIN MORTIMER HOPKINS, PH. D., Professor of Rhetoric and English Language.

FRANK HEYWOOD HODDER, PH. M., Professor of American History and Political Science.

WILLIAM CHASE STEVENS, M. S., Professor of Botany.

ARVIN SOLOMON OLIN, A. M., Professor of Education.

WILLIAM LIVESEY BURDICK, PH. D., LL. B., Professor of Law.

CHARLES SANFORD SKILTON, A. B., Professor of Musical Theory and Organ.

CHARLES EDWARD HUBACH (Graduate of the New England Conservatory of Music; Sbriglia, Paris), Professor of Voice.

- IDA HENRIETTA HYDE, PH. D., Professor of Physiology.
- JAMES NAISMITH, M. D., Professor of Physical Education.
- SAMUEL JOHN HUNTER, A. M., Professor of Entomology.
- L. D. HAVENHILL, PH. M., Professor of Pharmacy.
- FREDERICK EDWARD KESTER, PH. D., Professor of Physics.
- EDNA D. DAY, PH. D., Professor of Home Economics.
- HAMILTON PERKINS CADY, PH. D., Professor of Chemistry.
- MERLE THORPE, A. B., Professor of Journalism.
- ELMER FRANKLIN ENGEL, A. M., Associate Professor of German.
- JOHN NICHOLAS VAN DER VRIES, PH. D., Associate Professor of Mathematics.
- HENRY WILBUR HUMBLE, LL. B., A. M., Associate Professor of Law.
- CLARENCE ADDISON DYKSTRA, A. B., Associate Professor of History.
- ARTHUR JEROME BOYNTON, A. M., Associate Professor of Economics.
- GEORGE J. HOOD, B. S., Associate Professor of Mechanical Drawing.
- WILLIAM OLIVER HAMILTON, A. B., Associate Professor of Physical Education.
- FRANK EVERETT JONES, Assistant Professor of Carpentry and Pattern Making.
- CLARENCE CORY CRAWFORD, PH. D., Assistant Professor of European History.
- EARL W. MURRAY, A. B., Assistant Professor of Latin.
- JAMES EDWARD TODD, A. M., Assistant Professor of Geology and Mineralogy.
- HARRIET GRESSINGER, MUS. B., Assistant Professor of Piano.
- JAMES ANDREW CAMPBELL, A. M., Assistant Professor of German.
- HOMER WALKER JOSSELYN, A. M., Assistant Professor of Education.
- LULU GARDNER, A. B., Assistant Professor of Rhetoric.
- HERMAN CAMP ALLEN, A. M., Assistant Professor of Chemistry.
- VICTOR EMANUEL HELLEBERG, A. B., LL. B., Assistant Professor of Sociology.
- DE WITT CLINTON CROISSANT, PH. D., Assistant Professor of English.

- HERBERT E. JORDAN, PH. D., Assistant Professor of Mathematics.
GEORGE ELLSWORTH PUTNAM, B. LITT., Assistant Professor of Economics.
EDMUND P. R. DUVAL, A. M., Assistant Professor of Mathematics.
CHARLES A. SHULL, B. S., Assistant Professor of Botany.
GEORGE W. STRATTON, PH. D., Assistant Professor of Chemistry.
NADINE NOWLIN, A. M., Instructor in Zoölogy.
MAY GARDNER, A. B., Instructor in French.
EDWARD L. GRIFFIN, A. B., Instructor in Chemistry.
JOHN J. WHEELER, A. B., Instructor in Mathematics.
HUBERT WILTFONG, Instructor in Forging.
MAUD MILLER, MUS. B., Instructor in Piano.
ANNA LOUISE SWEENEY, MUS. B., Instructor in Piano.
WORTH H. RODEBUSH, A. B., Instructor in Chemistry.
REYNOLD K. YOUNG, PH. D., Instructor in Astronomy and Physics.
ELIZABETH NOWELL, B. S. in Home Economics, Instructor in Home Economics.
OLIVIA OLSSON, Instructor in Voice.
LARRY M. PEACE, A. M., Preparator and Demonstrator in the Botanical Laboratory.
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PURPOSES OF THE SUMMER SESSION.

In accordance with a general desire to increase the usefulness of the University and bring its resources nearer to the people of the state, the Summer Session was established to meet the demands of the following classes:

1. *City and county superintendents, principals, and teachers*, especially those having work of high-school grade, to enable them to review their work, to become familiar with the latest and best methods, and thus prepare to do their own work better. Every department of the University in which entrance credits are accepted offers one or more courses intended to assist high-school teachers of that subject. If teachers do not find such courses as they need, the University will be grateful for suggestions.

2. *Instructors in other colleges* who may wish the opportunity of further study, of observing the work in their subject as pursued at the University of Kansas, and of using the laboratories and library of the University.

3. *Students preparing to enter the University*, to enable them to complete their preparation. No special classes are conducted

for such students, but entrance credits may be secured in botany, chemistry, French, German, or zoölogy.

4. *University students*, whether already matriculated or coming for the first time into membership in the University, to enable them to correct irregularities in their standing or to attain standing in the University. Almost all of the courses are open to such students.

5. *Graduate students*, especially such as are prevented by regular employment from attending the University during other sessions. No course is open for graduate credit unless its description so states. Attention is invited to the provision by which such an amount of *in absentia* work is permitted that the degree of master of arts may be secured by residence in three Summer Sessions.

6. *Law students* who desire to reduce the time of their course from three years to two.

GENERAL INFORMATION.

LENGTH OF COURSES.

Most of the courses run for six weeks, from June 12 to July 23. But in a few departments three-weeks courses are given after the close of the six-weeks session. These courses run from July 24 to August 13.

FEEES.

The Summer Session fee for residents of Kansas is ten dollars, for nonresidents fifteen dollars. This fee covers admission to all courses except those in music, and the medical courses which are given at Rosedale. The fee is the same whether one enters for three, six, or nine weeks.

AMOUNT OF CREDIT.

The normal amount of credit to be obtained in the six-weeks session is five hours; the maximum is six hours. *Under no circumstances will registration for more than six hours' credit be permitted in this session.* The amount of credit given for each course is indicated in the statement of that course. As there are no one-hour courses, a student may enroll in no more than

One five-hour course, or

One three-hour and one two-hour course, or

Two three-hour courses, or

Three two-hour courses.

The maximum amount of credit to be obtained in the three-weeks session is three hours. Students who avail themselves of both sessions may thus receive a maximum of nine hours' credit for their nine weeks' work—just half the maximum credit allowed for the eighteen weeks of the regular sessions.

REGISTRATION.

Work begins promptly at the scheduled hours on Thursday, June 12. Classes meet again not only on Friday, June 13, but on Saturday, June 14, though on no other Saturday of the session. Students are urged to be present on the opening day. Registration for full credit is permitted up to the night of Monday, June 16, for the benefit of those unavoidably detained; but there is a distinct loss to the student if he enters so late. After June 16 he will not be registered for full credit.

NATURE OF COURSES.

The courses offered are strictly of university grade, and are selected largely with reference to the needs of secondary teachers. No review courses in subjects taught in elementary schools are offered; and the only secondary subjects are such as are common to the high school and the College, *e. g.*, elementary German. The admission requirements which are in force during the regular session are not maintained in the summer, because it is recognized that maturity may compensate for the lack of a high-school training. But the summer classes presuppose a high-school training and should not generally be taken with less preparation. In fact, most of them require more preparation, though many are intended for students who have just graduated from high schools.

DUPLICATION OF CREDIT.

Regular students in the University must be on their guard against the duplication of credit, especially as many of the summer courses do not exactly correspond with the regular courses. All the Summer Session courses in a department are numbered consecutively with Roman numerals. Following the Roman numeral is usually an Arabic numeral enclosed in parentheses. This latter numeral is the number of the course in the regular catalogue which is considered a duplicate of the summer course.

LIST OF COURSES.

The numbers given in parentheses are the numbers of the courses as listed in the General Catalogue for 1911-'12.

Students who need to complete their Freshman and Sophomore requirements must remember that only courses numbered from 1 to 49 can be used for this purpose. Students must be on their guard against duplication: courses marked "(nearly equals)," as well as those marked "(equals)," are considered duplicates of the regular courses.

Six-Weeks Session, June 12 to July 23.

ASTRONOMY.

I (equals 50).—DESCRIPTIVE ASTRONOMY. 3 hours credit in the College. 7:30 to 9. Young.

BOTANY.

I (equals 1).—ELEMENTARY BOTANY. 5 hours credit in the College or School of Pharmacy, or as an entrance unit. 7:15 to 12. Stevens.

II (nearly equals 51).—EXPERIMENTAL PLANT PHYSIOLOGY. 3 hours credit in the College. 8 to 9, and other hours by appointment. Shull.

III.—SCIENTIFIC BASIS OF AGRICULTURE. 3 hours credit in the College. 9 to 12. Shull.

IV (equals 54).—PROBLEMS IN THE MORPHOLOGY OF SPERMATOPHYTES. 3 or 5 hours credit in the College or Graduate School. Stevens.

CHEMISTRY.

I (equals 1).—ELEMENTARY CHEMISTRY. 5 hours credit in the College or School of Pharmacy, or as an entrance unit. 7:15 to 12. Stratton and Griffin.

II (equals 2).—INORGANIC CHEMISTRY. 4 or 5 hours credit in the College or School of Engineering. 7:15 to 12. Cady and Rodebush.

III (equals 3).—QUALITATIVE ANALYSIS. 5 hours credit in the College, School of Pharmacy, School of Medicine, or Chemical Engineering course; 4 hours credit in the other Engineering courses. 7:15 to 12. Allen and Rodebush.

IV (equals 54).—QUANTITATIVE ANALYSIS. 3, 4, or 5 hours credit in the College or School of Engineering; 2½ hours credit in the School of Pharmacy. 7:15 to 12. Allen.

V (equals 4).—ORGANIC CHEMISTRY I. 5 hours credit in the College, School of Pharmacy, or School of Medicine. 7:15 to 12. Griffin.

VI (equals 55).—ADVANCED QUANTITATIVE ANALYSIS. 2, 3, or 5 hours credit in the College or Graduate School. 7:15 to 12. Allen.

VII (equals 64).—GENERAL PHYSICAL CHEMISTRY. 5 hours credit in the College or Graduate School. 7:15 to 12. Cady.

ECONOMICS.

I (nearly equals 1).—ELEMENTS OF ECONOMICS. 2 hours credit in the College. 10 to 11. Putnam.

II (equals 54).—CORPORATION ECONOMICS AND FINANCE. 2 hours credit in the College or the Graduate School. 9 to 10. Putnam.

III (equals 51).—BANKING. 2 hours credit in the College or the Graduate School. 8 to 9. Boynton.

IV (nearly equals 53).—PUBLIC FINANCE. 2 hours credit in the College or the Graduate School. 9 to 10. Boynton.

V (equals 56).—ECONOMICS OF DISTRIBUTION. 2 hours credit in the Graduate School. Hour to be arranged. Putnam.

VI.—SEMINAR. 2 to 4 hours credit in the Graduate School. Hour to be arranged. Boynton.

EDUCATION.

I (nearly equals 64).—EDUCATIONAL PSYCHOLOGY. 2 hours credit in the School of Education or in the Graduate School. 9 to 10. Wilm.

II (nearly equals 51).—HISTORY OF MODERN EDUCATION. 2 hours credit in the School of Education. 10 to 11. Olin.

III (nearly equals 74).—ADMINISTRATION OF PUBLIC EDUCATION. 2 hours credit in the School of Education; 2 or 3 in the Graduate School. 9 to 10. Josselyn.

IV (equals 73).—SUPERVISION OF INSTRUCTION. 2 hours credit in the School of Education or the Graduate School. 8 to 9. Josselyn.

V (equals 59).—EDUCATIONAL CLASSICS. (First series.) 2 hours credit in the School of Education or the Graduate School. 9 to 10. Olin.

VI (equals 68).—PHILOSOPHY OF EDUCATION. 3 hours credit in the School of Education or the Graduate School. 10:30 to 12. Wilm.

VII.—SEMINAR. The Development of Medieval Universities. 2 hours credit in the Graduate School and the School of Education. Hours by appointment. Olin.

ENGLISH.

I (equals Education 86).—METHODS OF TEACHING ENGLISH. 3 hours credit in the School of Education or the Graduate School. 7:30 to 9. Hopkins.

II (equals 55).—LITERARY CRITICISM. 2 hours credit in the College or the Graduate School. 9 to 10. Hopkins.

III (nearly equals 77).—ENGLISH LITERATURE OF THE 19TH CENTURY. Poetry. 2 hours credit in the College or the Graduate School. 10 to 11. Dunlap.

IV (nearly equals 78).—SHAKSPERE. 2 hours credit in the College or the Graduate School. 11 to 12. Dunlap.

V.—THE MODERN DRAMA. 2 hours credit in the College or in the Graduate School. 11 to 12. Croissant.

VI (equals 69).—ELEMENTARY OLD ENGLISH. 3 hours credit in the College or the Graduate School. 9 to 10:30. Croissant.

VII (nearly equals 50).—ADVANCED ENGLISH COMPOSITION. 2 or 3 hours credit in the College. 7:30 to 9 for 3 hours credit; 8 to 9 for 2 hours credit. Gardner.

ENTOMOLOGY.

I (equals 1).—INTRODUCTORY ENTOMOLOGY. 5 hours credit in the College. 7:15 to 12. Hunter.

II.—FIELD ENTOMOLOGY. 3 to 6 hours credit in the College. A minimum of fifteen to thirty hours a week, part of which will be 10:30 to 12, the others by arrangement. Hunter.

III.—BIOLOGICAL SURVEY. 6 or 9 hours credit in the College or Graduate School. Hunter.

IV.—ORCHARD AND FOREST INSECT LIFE. 6 or 9 hours credit in the College or Graduate School. Hunter.

V.—RESEARCH.

FRENCH.

Ia (equals two-fifths of 1).—ELEMENTARY FRENCH. 2 hours credit in the College, School of Engineering, or School of Fine Arts, or as an entrance unit if completed by Ib. 9 to 10. Conklin.

Ila (equals two-fifths of 2).—ELEMENTARY FRENCH. 2 hours credit in the College, School of Engineering, or School of Fine Arts, or as an entrance unit if completed by Iib. 10 to 11. Conklin.

III (equals 3).—MODERN FRENCH PROSE WRITERS. 3 hours credit in the College, School of Engineering, or School of Fine Arts. 10:30 to 12. Gardner.

IV.—In addition to these courses, a course for advanced students will be offered, if the demand warrants it, in the Modern French Drama and Novel, or in Linguistics. 11 to 12. Conklin.

GEOLOGY.

I and II (equals 1).—GENERAL GEOLOGY. 5 hours credit in the College or School of Engineering. 7:30 to 10. Todd.

For the convenience of such as may desire to take only part of the course, it is divided into two distinct lines of work, either of which may be pursued throughout the term, viz.:

I (equals three-fifths of 1).—STRUCTURAL AND DYNAMIC GEOLOGY. 3 hours credit. 7:30 to 9.

II (equals two-fifths of 1).—HISTORICAL GEOLOGY. 2 hours credit. 9 to 10.

III (equals 50).—AREAL GEOLOGY. 2 hours credit in the College or Graduate School. 10 to 12. Todd.

GERMAN.

Ia (equals two-fifths of 1).—BEGINNING GERMAN. 2 hours credit in the College. 7:30 to 9. Engel.

IIa (equals two-fifths of 2).—GERMAN READER COMPLETED. 2 hours credit in the college. 10 to 11. Campbell.

IIIa (equals two-fifths of 3).—GERMAN PROSE, Freytag's *Die Journalisten*. 2 hours credit in the College. 11 to 12. Campbell.

IV.—TEACHERS' COURSE IN WILHELM TELL. 2 hours credit in School of Education. 9 to 10. Schoenfeld.

V (nearly equals Education 85).—TEACHERS' COURSE IN GERMAN. 2 hours credit in School of Education. 10 to 11. Engel.

VI.—GERMAN LITERATURE IN ENGLISH. 2 hours credit in the College. 8 to 9. Schoenfeld.

HISTORY AND POLITICAL SCIENCE.

I (equals 56).—ENGLISH HISTORY I. 2 hours credit in the College. 8 to 9. Crawford.

II (equals 59).—HISTORY OF ENGLISH LAW II. 2 hours credit in the College and Graduate School. 9 to 10. Crawford.

III (nearly equals 65).—THE AMERICAN REVOLUTION. 2 hours credit in the College or Graduate School. 9 to 10. Hodder.

IV.—RECENT AMERICAN HISTORY, 1877-1897. 2 hours credit in the College or Graduate School. 10 to 11. Hodder.

V.—AMERICAN FEDERAL GOVERNMENT. 2 hours credit in the College or Graduate School. 10 to 11. Dykstra.

VI.—AMERICAN STATE GOVERNMENT. 2 hours credit in the College or Graduate School. 11 to 12. Dykstra.

HOME ECONOMICS.

I (equals 1a).—FOOD PREPARATION. 3 hours credit in the College. 9 to 12. Day and Nowell.

II (equals Education 83).—TEACHERS' COURSE IN HOME ECONOMICS. 3 hours credit in the School of Education. 10:30 to 12. Day.

III (equal to parts 71 and 72).—TEXTILES AND CLOTHING. 3 hours credit in the College. 7 to 9. Nowell.

JOURNALISM.

I (equals 1).—THE NEWSPAPER. 2 or 3 hours credit in the College. 10 to 11. Thorpe.

II (equals parts of 60 and 61).—EDITORIAL PROBLEMS AND PRACTICE. 2 hours credit in the College. 9 to 10. Thorpe.

LATIN.

I (equals 4).—CICERO'S DE SENECTUTE, AND PROSE COMPOSITION. 3 hours credit in the College. 9 to 10:30. Murray.

II.—CICERO'S POLITICAL ORATIONS. 2 hours credit in the College or the Graduate School. 8 to 9. Murray.

III (equals 50).—ADVANCED LATIN COMPOSITION. 2 hours credit in the College or the Graduate School. 9 to 10. Walker.

IV.—STUDIES IN POST-AUGUSTAN POETRY. 2 hours credit in the College or the Graduate School. 10 to 11. Rice.

V.—LIFE OF THE ANCIENT ROMANS. 2 hours credit in the College or the Graduate School. 11 to 12. Rice.

LAW.

I.—CRIMINAL LAW. At 9. Burdick.

II.—TORTS. At 7:30. Burdick.

III.—AGENCY. At 9. Green.

IV.—INSURANCE. At 7:30. Humble.

V.—WILLS. At 7:30. Green.

VI.—PARTNERSHIP. At 9. Humble.

MATHEMATICS.

I.—SOLID GEOMETRY. 2 hours credit in the College. 9 to 10. Duval.

II (equals 3).—PLANE TRIGONOMETRY. 2 hours credit in the College or School of Engineering. 8 to 9. Van der Vries.

III (equals 4).—ANALYTIC GEOMETRY I. 2 hours credit in the College or School of Engineering. 9 to 10. Jordan.

IV (equals 5).—CALCULUS I. 3 hours credit in the College or School of Engineering. 7:30 to 9. Jordan.

V (equals 56).—HIGHER ALGEBRA II. 3 hours credit in the College or the Graduate School. 7:30 to 9. Duval.

VI (equals 61).—PROJECTIVE GEOMETRY. 2 hours credit in the College or the Graduate School. 9 to 10. Van der Vries.

MECHANICAL DRAWING AND ENGINEERING.

All hours for the drawing classes are by appointment, but must include some time between 10 and 12.

MECHANICAL DRAWING.

I (equals 1).—FREE-HAND DRAWING. 1 hour credit in the School of Engineering. Hood.

II (equals 2).—ELEMENTARY MECHANICAL DRAWING. 2 hours credit in the School of Engineering. Hood.

III (equals 3).—DESCRIPTIVE GEOMETRY. 3 hours credit in the School of Engineering or the College. 9 to 10. Hood.

IV (equals 4).—MACHINE DRAWING. 3 hours credit in the School of Engineering. Hood.

MECHANICS.

V (equals 6).—ELEMENTARY MECHANICS. 2 hours credit in the School of Engineering or the College. 8 to 9. Hood.

MECHANICAL ENGINEERING.

VI (equals 1).—MACHINE DRAWING. 3 hours credit in the School of Engineering. Hood.

MUSIC.

I.—TEACHERS' COURSE IN PUBLIC SCHOOL MUSIC. 2 hours credit in the School of Education. No extra fee. 11 to 12. Olsson.

Lessons in Organ and Harmony, Skilton; in Piano, Greisinger, Miller, and Sweeney; in Voice, by Hubach and Olsson; in Ear Training and Sight Singing, Olsson. Extra fees are charged.

PHARMACY.

I (equals 50).—PHYSIOLOGICAL CHEMISTRY. 5 hours credit in the College, the School of Pharmacy, and the Medical School. Havenhill.

A III.—INORGANIC PHARMACEUTICAL TESTING. 2 hours per day.

A IV.—ORGANIC PHARMACEUTICAL TESTING. 2 hours per day.

B V.—HISTOLOGICAL PHARMACOGNOSY. 2 hours per day.

C VII.—MANUFACTURING PHARMACY. 2 hours per day.

C VIII.—EXTEMPORANEOUS PHARMACY. 2 hours per day.

D QUIZ. 1 hour per day.

PHYSICAL EDUCATION.

I (equals Education 97).—THE PRINCIPLES OF SPORTS AND GAMES. 2 hours credit in the School of Education. 2:30 to 3:30, with practice at 3:30. Naismith.

II (equals Education 96).—TEACHERS' COURSE IN PHYSICAL EDUCATION. 2 hours credit in the School of Education. 1:30 to 2:30, with practice at 2:30. Naismith.

III.—SWIMMING. No credit.

IV.—TRACK ATHLETICS. No credit. 3:30 to 4:30. Hamilton.

V.—BASKET BALL. No credit. 4:30 to 5:30. Hamilton.

PHYSICS.

II (equals 6a).—GENERAL PHYSICS II. 3 hours credit in the College. 7:30 to 9. Kester.

III (equals 5b).—GENERAL PHYSICS LABORATORY I. 2 hours credit in the College. 9 to 10, or 10 to 11, the other hour by appointment. Young.

IV (equals 6b).—GENERAL PHYSICS LABORATORY II. 2 hours

credit in the College. 9 to 10 or 10 to 11, the other hour by appointment. Young.

V (equals 50).—MECHANICS AND HEAT. 3 hours credit in the College or Graduate School. 9 to 10:30. Kester.

PHYSIOLOGY.

I (equals 1).—GENERAL PHYSIOLOGY. 5 hours credit in the College. 8 to 12. Hyde.

II (equals 2).—ADVANCED PHYSIOLOGY. 5 hours credit in the College. 8 to 12. Hyde.

PSYCHOLOGY.

I (equals 1).—ELEMENTS OF PSYCHOLOGY. 3 hours credit in the College. 7:30 to 9. Bolton.

II (equals 2).—LABORATORY PSYCHOLOGY. 2 hours credit in the College. 9 to 11. Bolton.

SHOP WORK.

Courses 22 and 33 give no credit. Courses I, II, III, IV, V, and VI give two and one-half hours credit in the School of Engineering. For purposes of registration, however, each course will be counted as a two hour course. The shops will be open from 8 to 12 six days in the week, and from 1 to 5 five days in the week.

FORGE-SHOP WORK.

Shop I.—FORGING. Wiltfong.

Shop II.—PATTERN MAKING. Jones.

Shop 22.—JOINERY, WOOD TURNING AND FURNITURE MAKING. Jones.

FOUNDRY-SHOP WORK.

FOUNDRY WORK. Jones.

MACHINE-SHOP WORK.

Shop III.—BENCH WORK. Jones.

Shop 33.—A practical course in the application of shop III. Jones.

Shop IV.—LATHE WORK. Jones.

Shop V.—LATHE AND MACHINE TOOL WORK. Jones.

Shop VI.—HEAVY LATHE WORK, Planer and Milling-machine Work. Jones.

SOCIOLOGY.

I (nearly equals 50).—ELEMENTS OF SOCIOLOGY. 2 hours credit in the College or Graduate School. 8 to 9. Blackmar.

II (equals 52).—SOCIAL PATHOLOGY. 2 hours credit in the College or Graduate School. 10 to 11. Helleberg.

III (equals 57).—SOCIALISM. 2 hours credit in the College or Graduate School. 11 to 12. Helleberg.

IV (equals 100).—SEMINAR OF SOCIOLOGY. 2 or 4 or 6 hours credit in the Graduate School. Blackmar.

SPANISH.

Ia (equals two-fifths of 1).—ELEMENTARY SPANISH. 2 hours credit in the College or School of Engineering. 9 to 10. Gardner.

ZOOLOGY.

I (equals 1).—ELEMENTARY ZOÖLOGY. 5 hours credit in the College or as an entrance unit. 7:15 to 12. Nowlin.

II (equals 71).—PROTOZOÖLOGY. 5 hours credit in the College. 7:15 to 12.

III.—ZOÖLOGICAL STATE SURVEY WORK. 6 or 9 hours in the College or Graduate School. Baumgartner.

IV.—MARINE STATION WORK. 3, 6, or 9 hours credit in the College. Baumgartner.

Three-Weeks Session, July 24 to August 13.

BOTANY.

V.—ORGANIC EVOLUTION. 3 hours credit in the College or the Graduate School. Stevens.

CHEMISTRY.

VIII.—QUANTITATIVE ANALYSIS. 2 or 3 hours credit in the College. Allen.

IX (equals 56).—WATER ANALYSIS. 3 hours credit in the College or the Graduate School. Allen.

CVIII.—GAS ANALYSIS. 2 hours credit in the Graduate School. Allen.

ECONOMICS.

VII (nearly equals 61).—INSURANCE. 3 hours credit in the College or the Graduate School. Putnam.

EDUCATION.

VIII (equals 61).—SECONDARY EDUCATION. 3 hours credit in the School of Education or the Graduate School. Josselyn.

ENGLISH.

VIII (equals 71).—AMERICAN LITERATURE. 3 hours credit in the College or the Graduate School. Croissant.

FRENCH.

Ib and IIb (three-fifths of 1 or 2).—ELEMENTARY FRENCH. 3 hours credit in the College, School of Engineering, or School of Fine Arts. Conklin.

GERMAN.

Ib (equals three-fifths of 1).—BEGINNING GERMAN, completed. 3 hours credit.

IIb and IIIb (equals three-fifths of 2 or 3).—FREYTAG'S AUSEM GROSSEN KRIEGE. 3 hours credit, to complete either 2 or 3.

HISTORY.

VII (equals 66).—ENGLISH HISTORY II. 3 hours credit in the College or Graduate School. Crawford.

HOME ECONOMICS.

IV (equals 70).—PLAIN SEWING AND GARMENT MAKING. No credit. Nowell.

MATHEMATICS.

VII (equals 2).—COLLEGE ALGEBRA. 3 hours credit in the College or School of Engineering. Wheeler.

PSYCHOLOGY.

III (equals 57).—SOCIAL PSYCHOLOGY. 3 hours credit in the College or Graduate School. Bolton.

SHOP WORK.

All forge-shop and machine-shop courses for the six-weeks session are offered for the three-weeks session as well. None of the pattern-shop courses will be given in the three-weeks session.

SOCIOLOGY.

V (nearly equals 56).—THE FAMILY. 3 hours credit in the College or Graduate School. Helleberg.

THE SCHOOL OF EDUCATION.

FACULTY.

FRANK STRONG, PH. D., President.

WILLIAM HERBERT CARRUTH, PH. D., Vice President of the Faculties, and Professor of Germanic Languages and Literatures.

CHARLES HUGHES JOHNSTON, PH. D., Dean of the School of Education, and Professor of Education.

EDGAR HENRY SUMMERFIELD BAILEY, PH. D., Professor of Chemistry and Metallurgy.

CHARLES GRAHAM DUNLAP, LITT. D., Professor of English Literature.

EDWIN MORTIMER HOPKINS, PH. D., Professor of Rhetoric and English Language.

FRANK HEYWOOD HODDER, PH. M., Professor of American History and Political Science.

ERASMUS HAWORTH, PH. D., Professor of Geology, Mineralogy and Mining.

ARTHUR TAPPAN WALKER, PH. D., Professor of Latin Language and Literature.

WILLIAM CHASE STEVENS, M. S., 1893, Professor of Botany.

ARVIN SOLOMON OLIN, A. M., Professor of Education.

WILLIAM ALEXANDER GRIFFITH, (Academy Julien, Paris). Professor of Drawing and Painting.

EUGENE GALLOO, A. M., Professor of Romance Languages and Literatures.

CHARLES SANFORD SKILTON, A. B., Professor of Musical Theory and Organ.

CHARLES EDWARD HUBACH (Graduate of the New England Conservatory of Music; Sbriglia, Paris). Professor of Voice.

IDA HENRIETTA HYDE, PH. D., Professor of Physiology.

WILLIAM HAMILTON JOHNSON, A. M., Professor of Education.

JAMES NAISMITH, A. B., M. D., Professor of Physical Education.

SAMUEL JOHN HUNTER, A. M., Professor of Entomology.

CARL LOTUS BECKER, PH. D., Professor of European History.

FREDERICK EDWARD KESTER, PH. D., Professor of Physics.

EDNA D. DAY, PH. D., Professor of Home Economics.

LOUIS EUGENE SISSON, A. M., Associate Professor of Rhetoric.

RAYMOND ALFRED SCHWEGLER, A. M., Associate Professor of Education.

HOMER WALKER JOSSELYN, A. M., Assistant Professor of Education.

AUGUSTUS WILLIAM TRETTIEN, PH. D., Assistant Professor of Education.

WILLIAM JACOB BAUMGARTNER, A. M., Assistant Professor of Zoölogy.

GEORGE SAMUEL SNODDY, Assistant Instructor in Education.

ORGANIZATION AND PURPOSE.

The School of Education of the University of Kansas in its general features is representative of a national educational movement. It has developed as follows: In 1876 the legislature of the state of Kansas established a normal department at the University of Kansas. The work was not of university grade, and was discontinued by the University after some years. In 1893 a Department of Education, administratively and academically on the same basis with other departments, such as Latin, mathematics and zoölogy, was established, which continued until the year 1909 as a coördinate department under the College of Liberal Arts and Sciences. Differentiation within the general field of education and the demand for a multiplication of courses which should deal scientifically as well as practically with various and difficult types of educational problems, together with the consequent enlargement of the instructional staff, made necessary a new form of organization. As an expression of the aim, scope and scientific nature of this phase of university service to high-school teachers and school administrators, the Department of Education was erected into a School of Education by the Board of Regents in July, 1909, a Dean of the School being appointed in April, 1910. It thus assumed the rank of the professional schools of Medicine, Law, Engineering and Pharmacy. The purpose of the School is to furnish to prospective teachers, principals, and superintendents, and to all other persons interested in the professional aspect of education, so far as they fall within the scope of a university, adequate opportunities for specialization in the various phases of educational work. The plan of the organization represents the University's policy of assembling and correlating most effectively the numerous forces which naturally contribute more or

less directly to the preparation of educational leaders. The voting faculty and teaching staff of the School is consequently representative of practically all teaching interests, consisting of not only instructors in education courses, but of those giving teachers' courses in all branches of study offered in high schools.

The establishment of the School of Education bespeaks the University's policy of sanctioning in an administrative and decisive way this increasingly intimate and mutually helpful relationship which it enjoys with the teachers of the state. The fundamental purpose and the specific aim of the School of Education is to organize education in the University of Kansas on a strictly university and scientific basis, by equipping its students who have chosen teaching as a career with a knowledge of the principles of educational psychology, the historical evolution of educational thought and practice, and school organization, administration and method, so that they may contribute constructively toward the solution of the problems of the teaching profession throughout the public school system and thus become factors in developing a professional attitude toward teaching.

The courses are planned to meet the professional needs of the following classes: College and normal-school instructors in education, superintendents and principals of schools, heads of departments in normal and high schools, supervisors of special subjects, and teachers in high schools. Certain of the courses, in which education is presented primarily as an important function of society as well as of individuals, should also be of interest to all University students, whether they intend to become teachers or not, and are hence open to all College students of Junior standing.

The School has a growing educational museum of considerable value, including ancient and modern textbooks, former and present-day school appliances and equipments, maps and charts, a good deal of which is frequently in use in the Practice School. One special feature of this collection is an alcove of books for the professional teacher's library, a selected list of modern pedagogical or broadly theoretical treatments of current educational problems, movements, tendencies, and scientific discoveries or advancements. There are over five thousand volumes in the University library classified under the title "Education." This equipment is being greatly augmented through the acquisition of the files of leading French and German educational periodicals and classical treatises. The School of Education makes constant use of the stereopticon and numerous lantern slides, and has a rapidly growing collection of stereographs with stereoscopes for illustrating their proper use in the schools. A special room for this work, fitted up as a dark room, is reserved for such use by members of the Faculty of Education. Forty-five weekly or monthly educational periodicals come to the library. There are complete files of such American periodicals as the *Horace Mann's Reports*, *Reports of the Commissioner of Education*, *Education*, *The Educational Review*, *School Review*,

Elementary School Teacher, The Journal of Educational Psychology, The Pedagogical Seminary, Teachers' College Record and The Psychological Clinic. Recent acquisitions are files of such English journals as *Journal of Education, Educational Times, The Schoolmaster, Journal of Experimental Pedagogy,* and *Special Reports of British Board of Education*; such French journals as *L'Éducation, Revue Internationale de L'Enseignement, Revue Universitaire,* and *Revue Pédagogique*; and such German periodicals as *Zeit. f. Pädagog. Psych., and Experimentelle Pädagogie, Zeit. f. Schulgesundheitspflege, Monatschrift f. höhere Schulen,* and *Neue Jahrbücher.* In addition to the usual library facilities, a commodious seminary room and an alcove in the reading room of the library are reserved for the use of the several departments within the School of Education. The seminary room is equipped with separate card index system and is under the direction of a trained library attendant. The policy is to acquire, as rapidly as available funds will permit, the needed furnishings for a well equipped educational laboratory, demonstrational apparatus for educational psychology, for experimental education, and for school hygiene and medical inspection, and to continue in a systematic way additions to the textbook library and to the educational division of the general library.

The educational museum and laboratory contains collections of various kinds of typical work done in each grade of a school system, statistical charts, kindergarten exhibits, representative assortments of school textbooks of American, English, German and French schools, and other material appropriate to the purpose of best presenting to students working school conditions. The educational laboratory contains the standard demonstrational apparatus for the study of typical educational processes, a collection of apparatus for studying the psychological nature of distinctive educative processes, both physical and mental tests for the modern experimental study of school children, and instruments of reliable precision for research as well as for demonstration in connection with school hygiene. In connection with graduate work an educational laboratory with apparatus for technical research in the psychology of reading, writing, memory, learning, habit formation, and for experimental study of formal discipline is being developed.

The School of Education is organizing as rapidly as possible a plan to collect for present and future use printed reports, school records and pupils' work on a much larger scale. To adapt a paragraph from Thorndike, the school of education of a state university should plan to preserve, exhibit and use as laboratory material all educational documents which represent the status of educational work in the state system.

"All printed reports of city superintendents, courses of study, catalogues of colleges, high schools and normal schools, proceedings of educational associations, reports of special committees, librarians, and directors of museums, alumni catalogues, and the like, should be preserved for present or future use.

School archives that record valuable objective facts in the educational life histories of individuals should be preserved in large numbers, say to include 10,000 individuals per year. Samples of the actual achievements of school pupils—their examination papers, when such are known to be honest tests, their achievements under outside tests, samples of their compositions, drawing, laboratory notebooks, and the like, should be preserved. Samples should be had from schools of many kinds; 200,000 samples annually, representing the work of 10,000 pupils, would not be too many."

If our school did this work for the schools of the state, the result would be a series of effective collections, far superior in almost every case to the miscellany that now drifts into the library by custom. These collections should all be made in duplicate. One set could then be kept for local use and the other be used by all students of education in common, the student being sent to it, or that part of the collection which he needed sent to him. At the present time, with competition, each institution tries to make an independent collection of this sort; the files are incomplete, the material is uncatalogued, and the collection is of little use locally and of no use to students of other institutions, all of whom possess about the same miscellany. Each state institution should have a first-rate special collection and a share in a total collection of educational sources such as now exists nowhere and could not for any past decade be obtained at any price.

REQUIREMENTS FOR ADMISSION AS A REGULAR STUDENT TO SCHOOL OF EDUCATION.

The work in the School of Education is based upon a four-year high-school course, or its equivalent, and the satisfactory completion of the first two years in the College of Liberal Arts and Sciences or their equivalent, *including a course in elementary psychology.*

Applications for admission to the School of Education who are deficient in a small portion of these requirements may be admitted conditionally, at the discretion of the Dean.

Claims for advanced standing must be made by the student at matriculation. Of his fitness for advanced work he must satisfy the professors of the subjects he elects.

When the student enters the School of Education he must select the academic subject or subjects in which he desires to specialize or announce his intention to specialize in administrative and supervisory work in education itself. His decision should largely rest upon his predilection for a study of several subjects, or for special proficiency and intensive application in a more limited range of studies, or for professional equipment in some phase of school administration and supervision. For general suggestions as to his choice of work he should consult those who offer the teachers' courses in the various subjects, or those in charge of departments of education proper.

DOUBLE REGISTRATION.

Students regularly registered in any of the other schools of the University may be admitted as either regular or unclassified students in the School of Education, but an application for such double registration must have approval of the deans of the two schools concerned. A student so registered will be subject to all the regulations concerning quantity and character of courses elected prevailing in both schools. Such students are exempt from additional fees.

UNIVERSITY TEACHERS' DIPLOMA.

The University teachers' diploma is accepted by the State Board of Education, and legally qualifies the candidate for the state teachers' certificate and for teaching positions. Without this certificate one has to go through the unpleasant and embarrassing process of standing county examinations in common-school subjects, or the examinations required by school systems organized in the first- and second-class cities. Besides this, all teachers should be professionally qualified for the work. Note that three hours (one course) in educational psychology, and three hours (one course) in history of education, *must* be taken before one may enter the other required work in education or teachers' courses.

On recommendation of the Faculty of the School of Education, the University teachers' diploma may be granted to graduates of the School of Education, to graduates of the College, and to those receiving degrees from the Graduate School, on the following conditions:

1. Candidates for both the teachers' diploma and the bachelor's degree must offer 125 hours of undergraduate work, including fifteen hours in the School of Education (at least twelve in the departments of Education).

2. Candidates for the teachers' diploma shall be required to offer a teachers' course in some academic subject. The prerequisite for a teachers' course shall be not less than twenty nor more than twenty-five hours in the subject in which the teachers' course is given or in closely allied subjects, three hours in history of education, and three hours in educational psychology. All teachers' courses, not including credits for practice, shall be not less than two nor more than four hours for one semester in length, and shall be open to students of Senior and Graduate standing. By permission of the Dean a portion of the work described above as prerequisite may be taken at the same time with the teachers' course, and special mature students under certain conditions, with the approval of the Dean, may specialize in education courses in lieu of a teachers' course.

3. The record of scholarship required for the teachers' diploma must average not lower than grade II in all undergraduate work.

The State Board adds a requirement of a course in school administration to the School of Education requirements of educational psychology and history of education and teachers' course.

DEGREE IN EDUCATION.

The degree of B. S. in Education, subject to regulations printed in the latest Announcements, may be granted to students who take seventy-two hours beyond the completion of Sophomore work. This must include twenty-four hours in education, and may include the completion of the requirements for the A. B. degree.

TEACHERS' CERTIFICATE.

A certificate, granting the privilege of teaching in the schools of Kansas for three years, will be issued by the State Board of Education to students holding the diploma from the School of Education. The Faculty of the School of Education will certify to the State Board of Education the year of graduation and the qualification of the candidate.

At the expiration of the three years a life certificate will be issued by the State Board, provided the candidate shall have taught successfully during any two of the three years. To secure this privilege the candidate must file with the State Board an application accompanied by evidence of the amount and character of his professional service under the preliminary certificate.

SPECIAL DIPLOMA.

Mature persons who for various reasons find themselves unable to meet the exact academic requirements for the bachelor's degree in education and the regular diploma and certificate, but who show the ability to carry on the work described for certain major subjects in the School of Education, may be admitted as candidates for a special diploma in teaching or the supervision of instruction in elementary schools, or in such subjects as music, free-hand drawing, manual training, hygiene, nature study, physical education, etc. Such special courses will be arranged for them as experience may show desirable. This special diploma has no legal significance.

GROUPING OF ACADEMIC SUBJECTS.

Students of the College of Liberal Arts and Sciences who desire to secure the state teachers' certificate and the degree from the School of Education and who have already chosen teaching as a profession would do well to plan for it from the beginning of their college course.

Because of the variety of work which most teachers are required to do upon beginning to teach, and because the state certificate is a general license presupposing a rather wide acquaintance with several branches of study, at least elementary courses should be taken in not less than five subjects which are taught in the high schools.

In addition each teacher should have thorough extended preparation in one subject and reasonable preparation in two or three subjects. Experience has shown that the following combinations are most frequently demanded: Latin, German; English,

German; English, history, civics; English, Latin, history; mathematics, physics; botany, zoölogy; mathematics, physics, chemistry; physics, chemistry, botany, zoölogy, physiology, physiography.

In the larger schools Greek is sometimes given with Latin, and French or Spanish with German. One teacher is frequently required to teach all the sciences. Public speaking is desirable as a part of the preparation for teaching English, and courses in physical education add desirable qualifications for all teaching positions in the public schools.

ACADEMIC COURSES.

All courses of a professional pedagogical character are offered in the School of Education. Academic courses, to which students of the School of Education are admitted on the same conditions as regular students of the College, are offered in the College of Liberal Arts and Sciences. Certain courses in other schools of the University will also be open to students of the School of Education. To secure admission to these courses not offered in the School of Education the candidate must register in the school in which the course he desires is given and be subject to all the regulations prevailing in that school.

The College offers the courses in literature, science and the arts that provide the so-called liberal education, and leaves in the main the applied sciences and arts to other departments. The regulations governing the work required for entrance and that done during the Freshman and Sophomore years are designed to result in the student's having had a minimum number of courses in the fundamental branches of knowledge, on which he will base his broader and more specialized work in the Junior and Senior years.

GRADUATE POLICY OF SCHOOL OF EDUCATION.

The progressive tendency in many states is to encourage teachers and school administrators to continue in some university advanced research in education. The most vital discoveries in this field must finally be made and checked up by those on the ground—teachers in active service. This work creates a demand for those who have had training in the methods of investigation and in the interpretation of the data collected.

The School of Education provides instruction suited to the needs of graduate students in educational psychology, history and philosophy of education, educational administration, and in the principles of teaching the various academic and technical subjects. In accordance with the regulations of the Graduate School, students may pursue, as a major or minor, advanced work in any of these subjects. The general policy of the School of Education will be to encourage the awarding of the higher degrees, with education as a major subject, only to those persons who have already demonstrated their ability as teachers in their special subjects. This requirement may be waived at the discretion of the Faculty of the School of Education.

A close connection hence exists naturally between the School of Education and the Graduate School. A large proportion of those who enter the Graduate School expect to become teachers in colleges, normal schools, and in the best public-school systems. Indeed, the master's degree seems again about to become a teaching degree, as it was historically. The degree of Ph. D., when taken with education as a major, should of course imply not only high grade of scholarship but also a high grade of professional skill and temperamental fitness. The master's degree usually requires one year of graduate work; the doctor's degree three years. Work leading to these higher degrees, with education as a major, will be planned in such a way as to afford preparation for the responsible positions, particularly those involving administrative and supervisory duties and teaching positions in colleges and normal schools. Graduate work, undertaken with the major in some academic subject and the minor in education, is usually planned in such a way as to afford desirable equipment for the teaching of special branches.

GRADUATE DEGREES.

For superintendents, supervisors, high-school principals, college and normal-school instructors in education, and teachers of psychology and education in normal-training high schools, the advanced courses in education are desirable and may be so planned that the master's degree (30 hours of graduate work) may be won either by consecutive study or through several sessions of Summer School work when a full year's residence is not possible. All this work for the master's degree with education as major should be planned carefully from the beginning, after consultation with the Dean of the School of Education. Graduate students, by enrolling in educational psychology and in secondary education, may win extra hours of credit by carrying on in connection with this class work further investigation on selected topics of the course. Credits for this graduate work will be awarded as consideration of the individual work thus accomplished may warrant, provided the limits set to amount of residence Summer School credits are observed.

DEPARTMENTS OF SCHOOL RELATIONS.

The Departments of School Relations, enlarged and organized within the School of Education, represent the policy of closely affiliating within a single organization those various extra-instructional functions of the University which its complicated relationships with the school forces of the state make necessary.

In the divisions outlined below are embraced the various activities of the Departments of School Relations:

1. High School Relations.
2. (a) School Service Bureau. (b) Elementary Education in Relation to Secondary, including the administration and supervision of instruction.

3. School Hygiene, including systems of mental and physical tests, medical inspection and sanitation.
4. Department of Athletic Relations.
5. Publication of Educational Reports and Investigations.

1. The Department of High School Relations, through its proper representative, will interpret the University's position in educational matters, and will administer the established regulations governing the University's attitude toward all school matters of administration, of educational standards, and of coöperation in the development of public education generally. In high-school relations the ideal will be, more than formerly, that of coöperating with those who in various sections of the state are carrying on significant educational experiments, and of making coöperative studies of the school activities of the state, in such a way that the yearly reports and published investigations may conserve the best of the state's educational experience and make it common property. Inspection, in the mechanical sense of interpreting fixed standards, is no longer the chief feature of its work. Instead, by visits, conferences and coöperation, the intimate practical acquaintance of University forces and public school forces with each other's problems and points of view is to become the definite aim of the work.

2. (a) One department of School Service will develop mainly along lines already undertaken—the popularizing of ideals of higher education and the bringing of the University to the people. Lectures from the University staff of instructors will be supplied whenever possible to the various sectional, county and rural teachers' associations, and conferences and counsel concerning all details of school work will be conducted by personal visits and by systematic correspondence whenever opportunity for such service comes. The propaganda for vocational guidance of school children has become a slogan for public educators. The development of this aspect of our democratic system of education is to be a prominent feature of the work. This development is based upon the modern conception that students should not have to wait until they leave school before they find out what are specific qualifications for the different professions. Vocational advice through school bureaus will become a feature of public education. This department will endeavor to coöperate with school officers in forwarding this movement.

(b) The field of Elementary Education, as it is related to high-school work and thereby articulated with all the state systems of higher education, will receive stress to the extent that the scientific study of this grade of public education falls within the field of University study. Superintendents and grade principals are now practically required by educational necessity to be experts in analyzing the principles of supervision of elementary instruction; in tabulating and charting conditions as regards retardation, elimination, etc.; in revising methods of preserving in reliable statistical records the yearly work; in devising more satisfactory schemes for individual student rec-

ords, and in adapting gradually more scientific grade and promotion principles. For work of this character it is proposed to offer the services of an expert to those wishing to coöperate with this department.

3. The Department of School Hygiene has been organized because it is becoming urgent that mental and physical tests of all school children be frequently made by a systematic and scientific method. In connection with this study of the individual student's mental and physical condition a system of medical inspection is becoming a marked feature of school work. Likewise the development of plans for spreading the knowledge of school hygiene, sanitation and the elementary principles of preventive medicine must follow. By coöperation with the Medical School and the instructors in physical education of the University, the School of Education, through this department, hopes to be of practical service to the schools of the state. Boards of education and superintendents of schools wishing to establish or to revise a system of medical inspection, or to inaugurate a plan for the keeping of records of individual school children which will show a useful tabulation of mental and physical characteristics, are requested to call upon this department at any time. Apparatus for demonstrating these methods of inspection and tests constitute a part of the equipment of the laboratory of the School of Education. A representative of the School, upon invitation, will spend a day at any school demonstrating these methods in so far as they seem practicable. This department also wishes to undertake some work looking toward general enlightenment on problems of sex hygiene, and wishes to coöperate with school authorities interested in arranging a series of four or six lectures for boys, and as many for girls. These lectures, organized as part of the instructional work of high schools, are to be given by members of the Faculty of the School of Education, who are equipped temperamentally and scientifically for this work.

4. The Department of Athletic Relations will aim to train students who from time to time can go out from the University to different schools and help in a systematic way in the organization and equipment required to inaugurate new lines of athletic activities, such as track work, basket ball, football, soccer, baseball and handball, and other sports which require some expert knowledge and initial encouragement. In addition to these definite organizations of sports, efforts will be made, where feasible, to assist in establishing and extending playgrounds by means of lectures, illustrations, and advice as to location and equipment of fields and the setting up of field apparatus. In addition to sending out students trained for service in these matters, instructors in the Department of Physical Education will themselves, by visits and by correspondence, do whatever they can to further the development of athletics as a part of educational work.

5. A fifth division of the School Relations work is the Department of Educational Publications. This extra-instructional work consists in the publication of summaries of all the work

above in a series of studies in education. These educational reports and investigations should represent a service for the state of Kansas analogous to the School Bulletin Studies on similar subjects issued by the United States Commissioner of Education for the whole nation. This department will consequently limit itself strictly to problems connected with educational developments within the state, and will enlarge its educational museum by preserving the yearly printed documents of school reports, programs of study, unique policies of various school systems, and other accessible local data pertinent to educational study.

For further information concerning any of these lines of work, address inquiry to Dean of the School of Education, University of Kansas, Lawrence, Kansas.

RECOMMENDATION OF TEACHERS.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a representative committee of the Faculty of the School of Education preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position as teacher. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

Records are kept of every detail of the student's qualifications for teaching, including the estimates of all college professors of the scholarship, personality, strength of character, and general adaptability of the candidate, as well as critical estimates of his teaching ability, indicated by his practice teaching in Oread Training School.

The committee urges members of school boards and school administrators to come to Lawrence in person when possible, so that personal conferences with both University instructors and the candidates for teaching may insure mutual satisfaction and be a guarantee of effective service.

The committee has adopted the policy, in its official recommendations, of attaching special importance to graduate study in the professional preparation of teachers.

SUMMER SESSION COURSES FOR TEACHERS.

The courses offered in the Summer Session are for the most part courses which are offered in the regular sessions, or modification of such courses. The seven courses offered by the School of Education to Summer Session students are directly concerned with the practical problems of public-school teaching. *Most of the courses have been selected with a view to meeting the wishes of teachers, and many of them have been modified in some details for the same purpose.* But such modifications are not so great as to make the courses unsuitable for students who do

not intend to teach; nor do they lower the grade of the work.

Regular students of the University must be on their guard against duplicating work. Some of the Summer Session courses, while not exactly equivalent to regular courses, are so nearly equivalent to them that credit will not be given for both. In such cases a warning is given in the statement of the course by the words, "This course will be regarded as a duplicate of ———," Students who have had the regular course may not take for credit the Summer Session course. Students who take the Summer Session course will be barred in the future from the regular course.

Students who desire to complete the course for graduation in the School of Education as rapidly as possible, teachers who can not attend the School of Education during the regular session, and all those who desire to win both degrees—bachelor of arts and bachelor of science in education—may make up part of their credits in the Summer Session. Address all inquiries for detailed information to the Director of the Summer Session.

SCHOOLMEN'S CONFERENCES AT THE UNIVERSITY.

The School of Education has in charge the direction of the Annual High School Conference, which meets in March of each year and considers the professional and broadly educational problems of the high school. The Conference of Schoolmen, held during the summer and in connection with the Summer School courses in education, has for its purpose discussions of the large movements which modify educational thought and demand changes in educational policies and ideals. The attempt is always made to view Kansas school problems from this larger background. Eminent educational authorities are secured to take active parts in the conferences.

DEPARTMENT OF OBSERVATION AND PRACTICE TEACHING.

THE OREAD TRAINING SCHOOL.

The Oread Training School is a direct outgrowth of the increased demands upon the University for professionally trained teachers in the high schools of the state. Since the early organization of secondary schools, the colleges and universities have been called upon to prepare the teachers. The masters in the great public schools of England come from Oxford and Cambridge. The great universities of Germany prepare the teachers for the gymnasias; and when the high schools were organized in America people turned to the college and the university for the preparation of those who were to direct the work of instruction. As the high school has expanded in its purpose and function, new problems and responsibilities have arisen. It is in response to these demands that the Board of Regents of the University of Kansas erected the Department of Education into a School of Education, and in June, 1911, authorized the establishment of Oread Training School.

The Oread Training School is so organized as to serve two distinct functions. It serves as a school of observation and practice. The prospective teacher, after having pursued his academic and theoretical training far enough, may observe the best methods of high-school work. He is also offered an opportunity to gain practical experience in teaching under the direction and criticism of experienced supervisors. The school also has a second function. It is organized as a model high school where any student of high-school grade is assured a course that will best meet his individual needs according to the social demands. In this function the school is the laboratory for the School of Education and the high schools of the state where new methods of work may be tried out.

The school is under the direction of a principal who is also an instructor in the Faculty of the School of Education. Vital connection between this Training School and the School of Education is further effected by its supervisory relationships. The professors in the academic departments of the School of Education, who offer the teachers' courses, have immediate direction and supervision of the teaching.

The school is conducted in Myers Hall, adjacent to the University grounds, and is accessible to both the University officers and student teachers. University students with deficiencies may make up these in the school. Any student who has completed the eighth grade in the public schools, or its equivalent, is eligible to admission. Those who have credits for high-school work done elsewhere will be admitted to those advanced courses their previous work justifies.

OBSERVATION AND PRACTICE TEACHING FOR
GRADUATE STUDENTS.

Arrangements have been made with the authorities of several school systems, whereby a modification of the German Probejahr plan is made possible. Graduate students of the School of Education, and Seniors whose teaching qualifications are of a high order, and who have the indorsement of the School of Education, may be offered the privilege of teaching under direction of the several principals, and of studying at first hand the modern methods of school management and equipment. The students may spend a continuous period of four or more weeks of the college year in such service when feasible, and for this work may receive such credit toward their teachers' diploma and their degree in education as consideration of the individual cases may warrant. This practice work under expert direction must be done in connection with the theoretical courses of the School of Education, the *bona fide* school system serving as a genuine educational laboratory adjunct.

DESCRIPTION OF COURSES.

The courses are so arranged as to enable students to plan for their advanced work from their Junior year, with reference to three fairly distinct aspects of education, the historical, the scientific and theoretical, and the administrative. One course in history of education (50 or 51) and one course in educational psychology (64) are prerequisites for all other courses in the School of Education. Advanced credit from other universities or colleges, or from normal schools, will be granted as consideration of the individual cases may warrant. Such students should consult the Dean of the School before enrolling.

HISTORICAL COURSES.

50.—HISTORY OF ANCIENT AND MEDIAEVAL EDUCATION. Three hours, first semester, at 8 and 3:30. This course is a study of educational principles and practice, systems, and educational theorists among ancient and mediæval people. It includes the important features of Oriental, Greek, Roman, early Christian and Saracenic education, the renaissance of learning under Charlemagne, the rise of universities, and the early phases of the Renaissance movement. Olin.

Not open to students who have taken course 51.

51.—HISTORY OF MODERN EDUCATION. Three hours, second semester, at 8 and 3:30. This course begins with an examination of the doctrines and systems developing from the educational reforms and reformers of the seventeenth century, including Bacon, Comenius, Locke, and other innovators. In the eighteenth century the decline and restatement of humanism are studied, the strengthening of realism, the influence of Rousseau, and the institutional development growing out of these changes. In the nineteenth century emphasis is placed on the educational evolution of Germany, France, England and America under such leaders as Pestalozzi, Herbart, Guizot, Arnold, Spencer, Mann, and Eliot. Olin.

Not open to students who have taken course 50.

59.—EDUCATIONAL CLASSICS. Two hours, first semester, at 10:15. A critical and historical study of selected dialogues of Plato, and of the educational writings of Locke. An attempt will be made to trace the relation between the opinions of these two writers and the educational theory and practice of the age in which each lived. Olin.

60.—EDUCATIONAL CLASSICS. Two hours, second semester, at 9. An intensive study in their historical setting of the educational writings of Rousseau and Spencer. Olin.

63.—EDUCATION IN AMERICA. Three hours, second semester, at 9. This course will include a study of the origin and development of educational ideas, institutions and systems in the colonial

period, the evolution of the academy, high school, and professional school, the education of girls and women, manual and vocational instruction, and the work of leading educators and theorists, Mann, Willard, Lyon, Howe, Gallaudet, Barnard, Eliot, Harris. Olin.

102.—SEMINAR. Educational systems of Herbart and Froebel. Two hours, first semester, hours by appointment. Olin.

103.—SEMINAR. Origin and early development of Universities. Two hours, second semester, hours by appointment. Olin.

SCIENTIFIC AND THEORETICAL COURSES.

64.—EDUCATIONAL PSYCHOLOGY. Three hours, both semesters, at 9 and 2:30. This course deals with the general principles of psychology which can be applied to education and teaching, developing at the same time an elementary special psychology of the fundamental processes in educational development, such as attention, interest, feeling, and motor practice, followed by a critical study of psychology as applied to distinctive educational processes. Among the subjects treated are: Formal discipline, measurement of mental traits, habit formation and habit breaking in school work, typical studies in learning, and the psychology of number, reading, and language. Johnston and Josselyn.

65.—GENETIC PSYCHOLOGY FOR TEACHERS. Two hours, first semester, at 11:15. The purpose of this course is to present the facts of mental development and to summarize the results of experimental investigations and reliable observations which suggest direct educational applications. Schwegler.

71.—EDUCATIONAL PATHOLOGY. Two hours, first semester, at 10:15. The processes of growth and development of children are studied with special reference to the nature and causes of arrest as found in backward, defective and degenerate children. The various types of arrested development are emphasized, together with the physical, mental and social forces that tend to cause them. The course is intended for mature students who are preparing themselves for executive positions in town and city schools. Lectures and visits to the various institutions maintained by the state for these defective and delinquent children. Schwegler.

56.—VOCATIONAL EDUCATION. Two hours, first semester, at 9. This course includes a discussion of the history and status of industrial and vocational education in the United States and Europe. The following are some of the topics discussed: Attitude of organized labor; attitude of employers of labor; legislation; experiments by private philanthropic institutions, industrial corporations, and public schools; articulation with the present school system; results of industrial and vocational education as set forth in school records, reports of special commissions, etc. Josselyn.

53.—SOCIAL EDUCATION. Two hours, second semester, at 8. Education in its relation to society and to the elements and

forces of social life is the basis for this course. The various educational agencies—school, home, community, church and state—will be discussed from the sociological viewpoint. The influence, in the past, of social conditions upon educational aims, functions, organizations, curricula and methods, as well as the present social demands which are tending to further development and changes, will be considered. Josselyn.

67.—ADVANCED EDUCATIONAL PSYCHOLOGY. Two hours, second semester, at 10:15. This course is a continuation of course 64. Johnston, and Josselyn.

68.—PHILOSOPHY OF EDUCATION. Three hours, first semester, at 11:15. Lectures on the evolution of educational theories as expressed in the philosophical systems of ancient and modern writers. The course presents an attempted correlation of current educational theory and practice in their biological, psychological and sociological bearings. Schweigler.

78.—ADOLESCENCE. Two hours, second semester, at 11:15. A detailed study of the physical and psychological aspects of adolescence. The course will lay special stress on the problems of physical and mental hygiene, as they appear in the physical, intellectual, social and religious development of the adolescent. Schweigler.

66.—EXPERIMENTAL EDUCATION. Two hours, second semester, at 9. The work of this course consists in examining critically the methods and results of representative investigations having direct bearing on the problems of individual and class teaching, and in affording practice in adapting approved methods to the study of current school problems. It is designed to acquaint the student with experimental methods, both psychological and statistical, and to familiarize him with typical problems such as retardation, individual differences, habit experiments in school work, use of ordinary school statistics in educational investigations, value of individual record cards to parents, teachers and principals, means of improving the gathering and keeping of school records, etc. Josselyn.

70.—THE EDUCATION OF FEELING AND ATTENTION. The design of this course is to treat, both historically and constructively, the subject of the training of attention and feeling in education. A review of the attitudes of ancient and modern theorists will constitute the historical portion of the work. A consideration of typical philosophical and psychological attitudes toward the problem will follow this historical survey. The attempt will then be made to construct some workable concept of the relations of attention and the so-called elementary feelings to the complex intellectual and æsthetic states. The course will finally seek to emphasize the necessity of some recognition in educational methods and incorporation in educational theory of definite attentional and emotional training. Students without considerable preparation in philosophy, psychology and education are not advised to undertake the work. Lectures, prescribed readings, and thesis. Johnston.

55.—MENTAL MEASUREMENT OF SCHOOL CHILDREN. Two to four hours, second semester, at 10:15. This course consists in the study of the theory of subjecting mental capacity to standard measurement, together with laboratory attempts to demonstrate and apply these tests. Typical mental traits, such as those treated by Galton, Pearson, Thorndike and others, constitute the material for the work. The course may be taken, with the addition of more extended laboratory work, as a four-hour course. Schwegler.

57.—SCHOOL HYGIENE. Three hours, second semester, at 3:30. The work in this course will be considered under three principal divisions: (1) The conditions that determine growth and development in the different physiological stages of the child will be studied, and the common physical and mental tests employed in the study of school children will be examined. (2) The general principles of physical and mental hygiene involved in the study of school diseases, hygiene of the special senses, with tests and studies upon defective sight and hearing, hygiene of the mouth, teeth, voice, nose, physical and mental conditions of subnormal and supernormal children as affecting grading and classification, children's faults, personal habits, neuroses of development, fatigue, and the relation of these to school work will be traced. (3) The third part of the course will consist of a study of the physical conditions of the schoolroom, the standards of tests of light, sanitation and furnishings, hygiene of the classroom, instruction and discipline; medical inspection and sanitation of school buildings and equipment will be made. Trettien.

100.—SEMINAR IN EDUCATIONAL PSYCHOLOGY. Three to five hours' credit, both semesters, hours by appointment. This course is planned for those students who by predilection and training in systematic psychology are qualified to conduct investigations concerned with the application of psychology to educational procedure. Johnston.

101.—SEMINAR IN ABNORMAL PSYCHOSES. Two to three hours' credit, both semesters, hours by appointment. Schwegler.

ADMINISTRATIVE AND PRACTICAL COURSES.

72.—ELEMENTARY EDUCATION. Three hours, first semester, at 8. The elementary school and its problems are considered in the light of the historical development, characteristic tendencies, position in the educational system, organization, relation to the community, and course of study. Among the topics discussed are compulsory education and child labor; special schools for delinquents and defectives; special classes; vacation, evening, and continuation schools; and playgrounds. Josselyn.

73.—SUPERVISION OF INSTRUCTION. Two hours, first semester, at 8. The purpose of this course is to present the principles underlying the work of the schools, and to discuss the teaching of the several subjects in the curriculum. Typical courses of study are examined to see what the general practice is in different

cities. Among the special topics considered are departmental teaching programs, lesson plans, and standards and tests of teaching. The special feature of the course is to utilize elementary school work to illustrate fundamental principles of education. Josselyn.

61.—SECONDARY EDUCATION. Three hours, second semester, at 11:15. This course will be worked out under five heads: (1) Historical—including influences of the old grammar schools in England, the development of the colonial grammar schools, the rise of American academies and high schools, their character and growth, state systems of secondary education with some important recent tendencies. (2) The function of the high school—its relation to the elementary school, to higher educational institutions, to technical schools, to the social state, etc. (3) The course of study. A historical sketch of secondary school curricula, the bases upon which an American high-school course of study must rest, a comparison of sectionally typical high-school programs, the theory of the function of the course of study as a whole, an examination into the distinctive specific disciplines of representative established subjects in the course, a study of the reasons for the admission of vocational subjects, art appreciation courses, manual training, high-school hygiene, physical training, and moral education. Each member of the class will be expected to inform himself with more detail as to the history, status and specific educational value of the particular subject or subjects he proposes later to teach in the high school. (4) Extra-instructional high-school activities, including the socializing work of the high school, the organization for health, high-school athletics, debates, fraternities, religious life, high-school journalism, debates, civic leagues, part-time industrial work, bureaus for vocational guidance, and art clubs. (5) Organization and management. Types of secondary schools, the teaching staff, daily programs, discipline and control, and other problems, with some practical suggestions for their treatment. Johnston.

74.—ADMINISTRATION OF PUBLIC EDUCATION. Three hours, second semester, at 8. A second section will be formed if necessary. This course deals with the problems found in the organization and administration of the public school systems in the United States with special reference to city school systems. Among the topics discussed are: relation of national government to education; forms of educational control; the school superintendent; relation of superintendent, principal and teacher to school authorities; supervision of instruction; principals' and teachers' meetings; duties of principals and teachers; classification, grading and promotion of pupils; different methods of managing children; records of individual differences in pupils; study of normal and subnormal children, and the school in relation to parents' organizations, etc. Josselyn.

58.—COMPARATIVE STUDY OF EDUCATIONAL SYSTEMS. Three hours, first semester, at 9. This is a study of the organization and administration of the school systems of Germany, France and England, including elementary, secondary and higher schools.

The educational institutions of these countries and the methods of controlling and administering them will be compared with each other and with the corresponding institutions in the United States. Olin.

69.—TECHNIQUE OF TEACHING. Two hours, both semesters, at 3:30. A careful study of the fundamental principles of classroom instruction will be made. The various subjects in the curriculum will be analyzed from the standpoint of logic and psychology. Student attitudes, motives and values, together with library and laboratory utilization, will be studied. The Training School will offer abundant opportunities for demonstrative and illustrative material. The course is designed to supplement the work of teachers' courses and to correlate as much as possible with the practice teaching supervised by the principal of Oread Training School. Trettien.

77.—PRACTICAL PROBLEMS OF PUBLIC-SCHOOL EDUCATION. Saturday morning at 10, both semesters. Credit to be arranged. The work offered in this course is planned with special reference to the needs of actual teachers and administrators living in the vicinity of Lawrence. Vital problems in school work will be studied and interpreted in the light of modern scientific principles and methods of investigation. The following are some of the problems to be considered: Problems of physical growth and development of children, plays and playgrounds, motor training in school work, moral training, arrested development, retardation, basis of grading, school sanitation, physical, mental and moral tests of children, laggards and how to train them, child welfare organizations and their results.

The amount of credit given will depend upon the work of the individual student.

This course is designed for those teachers and school supervisors who, although in actual service, desire to continue their professional development. Assistant Professor Trettien will conduct the course, assisted from time to time by different members of the Faculty of the School of Education.

104.—SEMINAR IN EDUCATIONAL STATISTICS. Two to four hours, both semesters, hours by appointment. Josselyn.

TEACHERS' COURSES IN SPECIAL SUBJECTS.

The prerequisites for all teachers' courses are not less than twenty nor more than twenty-five hours in the subject in which the teachers' course is given or in closely allied subjects, three hours in history of education, and three hours in educational psychology. All teachers' courses, not including credits for practice, shall be not less than two nor more than four hours for one semester in length, and shall be open to students of Senior and Graduate standing. By permission of the Dean a portion of the work described above as prerequisite may be taken at the same time with the teachers' course, and special mature students under certain conditions, with the approval of the Dean, may specialize in education courses in lieu of a teachers' course.

The items enumerated below are suggestive of the kinds of topics with which the following teachers' courses in special branches are concerned:

1. A simple statement of the broader aspects of the distinctive field of education, indicating the special adjustment of the moral, æsthetic, social and practical disciplines to be reasonably expected from a study of the subject.

2. A brief sketch of the actual history of the subject in the school curriculum, showing the gradual change and improvements in the textbook presentations of the subject, and the gradual improvements in other apparatus than textbooks, adopted for use in teaching it.

3. The gradual change in the conception of its educational value and the degree and nature of correlation with other subjects, particularly since the report of the Committee of Ten.

4. The growing refinement of methods for presenting the subject.

5. The grade preparation to be presupposed at present, its present status, as seen from a comparison of typical high-school curriculums, together with the social, psychological and practical obstacles to its attaining its ideal educational aim.

6. The necessary, and also the more ideal, preparation called for in the teacher, academic and professional.

7. References to books and special monographs dealing with the topics of the course, and a suggested list of books desirable for reference for high-school libraries.

In addition to the instruction in the following specialized courses in the theory of teaching, a continuous period of not less than six weeks of supervised practice teaching should be arranged for by students electing such courses. Exceptional facilities are offered for this practice teaching in the Oread Training School. In some departments also observation and assistants' work, equivalent to the practice teaching, may be arranged for.

92.—TEACHERS' COURSE IN BOTANY. Three hours, second semester, at 8 or 10. Pedagogics and technique in botanical

instruction. Consists of reading, lectures, and laboratory work, including the preparation of slides and other materials for use in teaching botany. Charles.

92a.—PRACTICE TEACHING IN BOTANY. Second semester, hours to be arranged. Charles.

90.—TEACHERS' COURSE IN CHEMISTRY. Two hours, second semester. Pedagogics and technique of instruction in chemistry in the high school. Bailey and the instructor in charge of the elementary course.

90a.—PRACTICE TEACHING IN CHEMISTRY. Second semester, hours to be arranged. Bailey and the instructor in charge of the elementary course.

95.—TEACHERS' COURSE IN DRAWING AND DESIGN. Four hours. Prerequisite, courses 54, 51 and 1 in drawing. Griffith.

95a.—PRACTICE TEACHING IN DRAWING AND DESIGN. Second semester, hours to be arranged. Griffith.

86.—TEACHERS' COURSE IN ENGLISH. Three hours, first semester, at 2:30. The principles of teaching English composition, language and literature; lectures, reference reading, conferences, visiting of classes and schools, reports, and final thesis. Hopkins.

The prerequisites for course 86 are as follows:

Freshman English Literature (courses 10 and 11)....	5 hours.
Freshman English Composition (courses 1 and 2).....	5 "
Sophomore English Literature (courses 12 and 13)....	5 "
Advanced English Composition (any courses at option, 50 to 57)	5 "
Shakspeare (course 78 or equivalent)	3 "
Modern English Grammar (course 68)	2 "

Students should endeavor to become acquainted with the methods and points of view of different instructors. In English literature some time should be given to each of three classes of courses: general historical courses, intensive courses in particular authors, and courses devoted to the study of particular literary types. If possible, an intending teacher should add to his undergraduate courses a year of graduate study, in which further attention may be paid to language as well as literature and composition. He should not neglect other important subjects, among which should be named education, economics, philosophy, history, foreign language, and public speaking. Hopkins.

86a.—PRACTICE TEACHING IN ENGLISH. Both semesters, hours to be arranged. Hopkins.

93.—TEACHERS' COURSE IN ENTOMOLOGY. Three hours, second semester, 3:30 to 5:30. Laboratory course, adapted to those who expect to teach. Lectures upon life histories, insect relationships, choice of materials, and modes of presentation. Field work on habits of social insects. Illustrative cabinets, their preparation and use. Prerequisite, zoölogy 1. Hunter.

Those preparing to become teachers and investigators engaged in research work should complete the fundamental courses,

1 to 4, inclusive. The aims of each student will then largely determine the selection of advanced courses. The requirements for those expecting to teach entomology in secondary schools are courses 1 to 4, inclusive, and course 7. Hunter.

88.—TEACHERS' COURSE IN FRENCH. Three hours, second semester, at 11:15. Systematic review of the grammar from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of methods of teaching languages. Open only to students who give evidence of fitness for the work. Galloo.

88a.—PRACTICE TEACHING IN FRENCH. Both semesters, hours to be arranged. Galloo.

85.—TEACHERS' COURSE IN GERMAN. Three hours, second semester. Advanced grammar, with theory of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Engel.

Students who plan to become teachers of German in high schools and academies should consult with the head of the department before the close of the Sophomore year. Courses 1 to 13, inclusive, are open to all students of the College. Courses 50 to 58 are open to both undergraduates in the College and to graduate students.

58a.—PRACTICE TEACHING IN GERMAN. Both semesters, hours to be arranged. Engel.

91.—TEACHERS' COURSE IN HISTORY. Two hours, second semester, at 2:30. Educational values in historical instruction, and methods of teaching history in the high school. Becker.

91a.—PRACTICE TEACHING IN HISTORY. Both semesters, hours to be arranged. Becker.

83.—TEACHERS' COURSE IN HOME ECONOMICS. Three hours, second semester. A study of the history of the home economics movement, showing the reason for the diverse standards and aims to be found in the work in different schools. A study of the needs of different classes of schools, with a discussion of the kind of work appropriate to each. Especial emphasis will be put on the high-school problem, the ground that should be covered and methods of presentation. The planning of equipment of courses and of typical lessons. Day.

83a.—PRACTICE TEACHING IN HOME ECONOMICS. Both semesters, hours to be arranged. Day.

87.—TEACHERS' COURSE IN LATIN. Two hours, first semester, at 10:15. The work consists of discussion of the best literature on the aims and methods of teaching Latin, and a critical examination of some textbooks used in secondary Latin teaching. Walker.

Those who wish to secure a special recommendation as teacher of Latin must elect at least twenty-five hours in the department of Latin beyond course 4; courses 5 and 13 must be included. Other courses especially recommended to those who intend to teach are 7, 9, 10, 12, 50, 59 and 61, and in the course in

ancient history given by the Department of European History. Those who wish to do the best work in Latin will need, in addition to a greater amount of Latin, some Greek and a reading knowledge of German.

87a.—PRACTICE TEACHING IN LATIN. Both semesters, hours to be arranged. Walker.

99.—TEACHERS' COURSE IN MANUAL TRAINING. Both semesters, hours to be arranged. Jones.

99a.—PRACTICE TEACHING IN MANUAL TRAINING. Both semesters, hours to be arranged. Jones.

89.—TEACHERS' COURSE IN MATHEMATICS. Three hours, second semester, at 9. Designed for teachers and students preparing to become teachers of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of, (1) history of mathematics, readings, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) discussions on the best methods of presenting the topics. Students taking the above course will receive three hours' credit. Open to students who have completed courses 2 and 7 in mathematics. Mitchell.

Those qualifying as teachers of mathematics in high schools are advised to complete courses 2 to 9 (twenty hours) and follow these with work in physics, the history and pedagogy of mathematics, and practice teaching.

89a.—PRACTICE TEACHING IN MATHEMATICS. Both semesters, hours to be arranged. Mitchell.

94.—TEACHERS' COURSE IN MUSIC. Two hours, both semesters, at 1:30. Designed for teachers and students preparing to become teachers and supervisors of music in elementary, secondary, and higher schools. The course consists of a systematic review of the methods of teaching music. Students who give evidence of fitness for the work will be given opportunities for practice teaching, for which additional credit of from one to two hours will be given. Hubach.

94a.—PRACTICE TEACHING IN MUSIC. Both semesters, hours to be arranged. Hubach.

82.—TEACHERS' COURSE IN PHYSICAL GEOGRAPHY. Two hours, second semester, at 9. The course includes a history of physical geography and physiography in public schools and methods of teaching them, laboratory work and outdoor observations which can be conducted in high schools, meteorological apparatus and weather reports, and best methods of studying land forms and land sculpture with high-school students. Haworth.

82a.—PRACTICE TEACHING IN PHYSICAL GEOGRAPHY. First semester, hours to be arranged. Haworth.

97.—TEACHERS' COURSE IN PHYSICAL EDUCATION. Two hours, Tuesday and Thursday, at 9. Laboratory, hours by appointment. A study of the principles of play, the classification of

games, showing the grade for which each is adapted, and an analysis of the different games, showing the principles involved and the attributes developed. The methods used in coaching and officiating, the locating, equipping and organizing of playgrounds. Naismith.

97a.—PRACTICE TEACHING IN PHYSICAL EDUCATION. Two hours, first semester, at 8. Laboratory practice teaching, by appointment. An analysis of gymnastic movements, showing their adaptation to the different grades; the method of combining these into drills; devising drills for special occasions and to suit varying conditions; organizing and conducting classes; and observation of methods by visitation and practice teaching with selected classes. Naismith.

80.—TEACHERS' COURSE IN PHYSICS. Three hours, second semester, at 4:30. Discussions of the proper subject matter of an elementary course in physics, and of the various methods of treating such matter in demonstration, recitation and laboratory. Members of the class will give from time to time demonstrations on assigned topics in elementary physics. Stimpson.

80a.—PRACTICE TEACHING IN PHYSICS. Second semester, hours to be arranged. Stimpson.

81.—TEACHERS' COURSE IN PHYSIOLOGY. Three hours, second semester, Monday, Wednesday, Friday, at 2:30. Designed for teachers and students preparing to become teachers of physiology, hygiene and sanitation. The course embraces, (1) the preparation of laboratory material and apparatus, (2) a study of physiological topics pertaining to the school, home and social life of children, (3) investigation of the effect of environmental conditions upon health and development, (4) laboratory experiments, (5) discussion on the best methods of presenting the topics, (6) recitations and lectures. Hyde.

81a.—PRACTICE TEACHING IN PHYSIOLOGY. Second semester, hours to be arranged. Hyde.

84.—TEACHERS' COURSE IN PUBLIC SPEAKING. Two hours, first semester, at 4:30. This course is designed to meet the needs of the secondary-school teacher. The purpose of the course is to outline the common-sense, nontechnical methods of voice culture and to present a rational psychology of expression. Gesell.

84a.—PRACTICE TEACHING IN PUBLIC SPEAKING. Second semester, hours to be arranged. Gesell.

98.—TEACHERS' COURSE IN ZOÖLOGY. Three hours, second semester, at 8. Baumgartner.

98a.—PRACTICE TEACHING IN ZOÖLOGY. Second semester, hours to be arranged. Baumgartner.

For further information concerning the School of Education, address CHARLES HUGHES JOHNSTON, Dean, University of Kansas.

THE UNIVERSITY EXTENSION DIVISION.

The work of the University Extension Division is comprised under the following four departments:

1. The Department of Correspondence-Study.
2. The Department of Lecture-Study.
3. The Department of General Information and Welfare.
4. The Department of Debating and Public Discussion.

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RICHARD REES PRICE, A. M., Director of University Extension.

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ALLAN A. SEIPT, PH. D., Instructor in German.
R. K. YOUNG, PH. D., Instructor in Astronomy.
HELEN M. CLARKE, PH. D., Assistant in Correspondence Instruction.
NELLIE MAY STEVENSON, A. B., Assistant in Correspondence Instruction.
RALPH HALL SPOTTS, A. B., Organizer of Extension Work.

1. Department of Correspondence-Study.

GENERAL INFORMATION.

The University of Kansas is the head of the public-school system of the state. It offers higher education to all properly qualified students who come within its walls, follow its curriculum, and conform to its regulations. For such persons there is an unbroken path of progress from the first primary grade of the common schools to the highest degree conferred by the University.

But, unfortunately, for many persons this is not an unbroken path. A very small per cent of those who enter the schools ever reach the University. And a great many of those who drop out are fully capable, so far as mental equipment goes, of mastering a college education.

The Correspondence-Study Department has been organized with the needs of such persons in mind. If they have both capacity and ambition, they may now hope to attain an education outside of the formal system. Correspondence study will enable each student to receive effective individual instruction from experts according to his own needs and the requirements or limitations of his occupation.

HISTORY. The Regents have had it as their constant aim to make the University the working arm of the state, to have such research and investigation as the developing needs of the state demand worked out by experts in the University's laboratories and libraries. While instruction of the highest grade has been provided for resident students, it has been the policy of the Regents to make the University the center of every movement which concerns the interest of the state. Now it is proposed to give every man and woman a chance to get a higher education at a minimum of expense and inconvenience.

This last step is simply a logical development of preceding steps, which have all tended toward making the University in the best possible sense a democratic institution. In 1891 University Extension was established, whereby the people of the state were given the benefit of courses of lectures by University professors covering informational and cultural topics. In 1903 a Summer Session was opened for the admission of those who were so occupied during the school year as to be unable to enter as resident students. The establishment in 1909 of the Correspondence-Study Department of the University Extension Division was the culminating step in this effort to make the University serve in every way possible the educational needs of the state.

TEACHING BY CORRESPONDENCE. Experience and the example of the great commercial correspondence schools have demonstrated the fact that many subjects can be taught successfully by correspondence. While some of the special advantages of

residence study are lacking, this method has some compensating advantages of its own. In correspondence instruction, self-reliance, industry, initiative, perseverance and kindred qualities are peculiarly encouraged and developed. Each student studies and recites the whole lesson and every part of the lesson, and stands in relation to the teacher as an individual, and not as a member of a large class.

THE WORK OFFERED.

GRADE OF WORK. Most of the work offered by correspondence is of the regular college or university grade. Persons who are unable to spend the full number of years of residence study required for a University degree may take as much as one-half of the required hours toward graduation through correspondence. But the person who intends to earn a degree in this way should plan well in advance and take counsel with the University authorities concerning such studies pursued in absence. A student should plan to do the latter part of the University course in residence, *i. e.*, at the University, since the studies required in the Freshman and Sophomore years are more generally available for correspondence study.

Many persons have failed to complete a high-school course. These persons sometimes discover afterwards that the equivalent of a high-school course is a prerequisite for a career upon which they wish to embark. For the benefit of such persons, and also for those who lack certain units required for entrance to the University, many courses of high-school grade are now offered.

In the state of Kansas there are many adult persons engaged as farmers, artisans, or shop workers in the various trades and crafts. These persons need industrial training to give them that theoretical knowledge of principles and processes which is necessary for the advancement of the worker and the development of the industry. These persons commonly can not meet the entrance requirements of the University, and yet are in great need of the training and teaching which can be offered by its experts and specialists. For such persons vocational courses are prepared which will not command University credit, but will, nevertheless, give the desired training in the theory and practice of the various vocations.

The work of the Correspondence-Study Department is not designed to conflict with or compete with existing educational agencies, but rather to coöperate with them and supplement them. It is assumed that when a person can, he will be in residence at some educational institution. This instruction is designed for adult persons carrying on their own education. It is open to nonresidents as well as to residents of the state of Kansas.

THE SYSTEM.

PROCEDURE. The student who wishes to undertake correspondence study should first select such course or courses as he may desire to take, and send for an application blank. He should fill out the blank with all the information called for, and

return it with the required fee to the office of the Extension Division.

THE INSTRUCTION. Upon receipt of application and fee the first lesson will be sent, with instructions for study and methods of preparation, and directions for returning lesson sheets and reports. Each lesson will be returned to the student with such corrections, explanations and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

BY WHOM PREPARED. These courses are prepared by the members of the University Faculty, and each represents a definite amount of work corresponding to an equivalence of work done in residence at the University, or in the standardized schools of our educational system.

THE UNIT COURSE. The unit course is divided, where practicable, into forty assignments, representing a five-hour course in residence. Such a course represents at least an amount of work equal to that done in residence at the University in a study of five full recitation-hours per week for one semester or half year. It is assumed that this work may be done by the average student in forty weeks with a minimum leisure for study of one hour per day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as he is able. Shorter courses are ordinarily divided into fifths of the unit course of forty assignments, corresponding to three-hour, two-hour, or one-hour courses in resident work at the University. A three-hour course in residence, then, would be covered by correspondence teaching in twenty-four assignments, and shorter courses in proportion. Two assignments in correspondence approximately cover the ground in quantity of a week's work in residence.

EXAMINATIONS. Examinations are optional with the student, but are required where credits are sought. These examinations must be taken at the University, or under conditions approved by the University. In the latter case, arrangements may often be made with the local superintendent of schools to conduct the examination.

REGULATIONS.

1. Students may begin correspondence courses at any time during the year, but the Department can not guarantee that all the courses will be given during the summer months.

2. For admission to the Correspondence-Study Department no preliminary examination is required. The student is required to fill out an application blank giving such information as may be helpful in adapting the instruction to the personal needs of each student.

3. Students who undertake correspondence-study work for University credit must state this fact in advance and comply with all the requirements of the University.

4. Persons who seek a University degree must conform to all the requirements exacted by the College or School in which such degree is sought. A maximum of one-half the required credits for the A. B. degree may be accumulated through correspondence.

5. Combinations of correspondence-study and the residence work of the Summer Session are possible and recommended.

6. Correspondence students will be expected to complete a unit course within twelve months from the time of enrollment.

7. During an instructor's vacation a substitute will be provided to carry on such course or courses, if possible, or the time for completing the course will be extended.

8. No fee is refunded because of a student's inability to enter upon or pursue a course for which he has once registered. If an application for instruction is rejected, the fee is returned.

9. Each correspondence course is equivalent to the corresponding residence course, and commands credit unless definite statement is made to the contrary.

10. Not more than two courses may be carried through correspondence-study at one time, but after one course is completed another may be taken up and carried until the year expires or enrollment is renewed.

11. Students enrolling for credit must meet the prerequisite conditions for each course. This regulation may be waived by the instructor for a student enrolling not for credit.

SPECIAL ENGINEERING REGULATIONS.

1. Not more than one-fourth of the number of unit hours of credit required for graduation in any engineering department may be obtained through correspondence-study.

2. Not more than seven hours of credit in sequence in courses which are interdependent may be obtained through correspondence.

3. A failure in any branch in residence may not be made up through correspondence.

UNIVERSITY CREDIT.

1. University credit can be granted only to students who have met the entrance requirements of the University. Upon satisfactory completion of a correspondence course designed for credit, such persons will be awarded a certificate of credit in the University. Other students' grades will be recorded merely in the files of the department and certificates issued for the same.

2. The maximum credit granted for work done by correspondence-study may not exceed one-half the unit hours required for graduation.

3. At the completion of each correspondence-study course for University credit the student shall pass an examination held under the direction of the instructor giving such course, or by some one designated by the University for that purpose.

4. Work taken for credit may not be done by any student while in attendance at any institution of learning.

5. Admission credit is given for courses covering college entrance requirements which are satisfactorily completed and passed by examination.

6. University credit is given for courses of a college grade satisfactorily completed and passed by examination.

7. If the student has a record of residence work in the University, credits gained from correspondence courses are immediately transferred to that record; if not, they are held in the Correspondence-Study Department until the student secures such a record covering one year of study in residence.

8. All courses offered by the Correspondence-Study Department, whether taken for University credit or not, are on a uniform basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be awarded certificates of the grade in which the work is taken.

THE HOUR. The term "hour," as used in the General Catalogue of the University, means one hour of class work a week for one semester, or half year. The unit course is a five-hour course; that is, one in which the class meets for one hour five days in the week for half a year.

EXPENSES.

Every student who enrolls will be charged only the regular \$10 incidental fee for residents of Kansas, or \$15 for nonresidents. This covers a year's tuition, during which period the student may carry two courses at a time and complete as much work as he finds possible. Textbooks, apparatus, dissecting material, chemicals, etc., must be purchased by the student at the University or elsewhere.

MATRICULATION. The matriculation fee of five dollars is payable only once and is exacted only from those who enter for study in residence, not from correspondence students.

INCIDENTAL FEE. The incidental fee covers the cost of tuition for one year from the date of registration, and must be paid each year that the student reënrolls for study. This fee is the same for all schools of the University in correspondence-study, but the student is limited to two courses at a time.

BOOKS AND OUTFIT. All necessary textbooks, drawing outfits, apparatus, dissecting material, etc., are extra, and must be procured by the student. The student also pays postage one way.

PAYMENTS. The incidental fee may be paid in monthly payments of five dollars when the student finds it necessary. In this plan the general rule of payment in advance applies. No extra charge is exacted when payments are made by installments. *But in every case at least five dollars of the required fee must accompany the application.*

HOW TO REMIT. Money should be sent in the form of postal or express money order, or Kansas City or Chicago draft, made

payable to the University of Kansas. Mail to the Director of University Extension, Lawrence, Kan.

THE COST ANALYZED. No effort is made to put the fees of the Correspondence-Study Department or of the University Extension Division on a money-making basis. The effort is rather to put the fees upon the lowest operating basis. The fees for the Correspondence-Study Department are therefore the same as those exacted from students in the Summer Session.

TRAVELING LIBRARIES. In some of the courses offered through correspondence a collection of books of reference for collateral and supplementary reading is required, so extensive that it would be a hardship on many persons to be compelled to buy these books; and yet they are books used for regular reference in the University library by students taking the same courses in residence, and are essential for the proper grasp of the subject matter. To obviate this difficulty, an arrangement has been made with the State Traveling Libraries Commission at Topeka to furnish these reference books in loan libraries of ten to twelve volumes, a separate library for each of such courses. A library covering the work of a certain course may thus be obtained and used by the student for the mere cost of transportation from Topeka and return. Which courses need traveling libraries may be learned upon application.

COURSES IN CORRESPONDENCE-STUDY.

ASTRONOMY.

1.—**DESCRIPTIVE ASTRONOMY.** Twenty-four assignments, three hours' College credit.

BOTANY.

1.—**GENERAL MORPHOLOGY OF PLANTS.** Forty assignments, five hours' College credit.

2.—**GENERAL MORPHOLOGY OF CRYPTOGAMS.** Forty assignments, five hours' College credit.

3.—**PLANT HISTOLOGY.** Forty assignments, five hours' College credit.

CHEMISTRY.

1.—**ELEMENTARY CHEMISTRY.** Forty assignments, five hours' College credit.

2.—**SANITARY AND APPLIED CHEMISTRY.** Forty assignments, five hours' College or Engineering credit.

3.—**QUANTITATIVE ANALYSIS.** Forty assignments, five hours' College or Engineering credit.

ECONOMICS.

1.—ELEMENTS OF ECONOMICS. Forty assignments, five hours' College credit.

2.—TRADE-UNIONISM AND LABOR ORGANIZATIONS. Twenty-four assignments, three hours' College credit.

EDUCATION.

1.—HISTORY OF ANCIENT AND MEDIAEVAL EDUCATION. Twenty-four assignments, three hours' College or Education credit.

2.—HISTORY OF MODERN EDUCATION. Twenty-four assignments, three hours' College or Education credit.

3.—EDUCATIONAL PSYCHOLOGY. Twenty-four assignments, three hours' College or Education credit.

4.—PRINCIPLES OF EDUCATION. Twenty-four assignments, three hours' College or Education credit.

5.—ADMINISTRATION OF PUBLIC EDUCATION. Twenty-four assignments, three hours' College or Education credit.

6.—SCHOOL HYGIENE. Twenty-four assignments, three hours' College or Education credit.

ENGINEERING.

1.—HIGHWAY CONSTRUCTION. Sixteen assignments, two hours. Not for University credit.

2.—MECHANISM AND MACHINE DESIGN. Thirty-two assignments, four hours. Not for University credit.

3.—POWER-PLANT ENGINEERING. Forty assignments, five hours. Partial Engineering credit.

4.—ELEMENTS OF DIRECT-CURRENT ELECTRICAL ENGINEERING. Thirty-two assignments, four hours. Not for University credit.

5.—FREE - HAND LETTERING AND MECHANICAL DRAWING. Twenty-four assignments, three hours' Engineering credit.

6.—MACHINE DRAWING. Twenty-four assignments, three hours' Engineering credit.

7.—ELEMENTARY MECHANICS. Sixteen assignments, two hours' Engineering credit.

8.—MINE SURVEYING OR MINE ENGINEERING. Forty assignments, five hours. Not for credit.

9.—GENERAL MINING. Forty assignments, five hours. Not for credit.

10.—COAL MINING. Forty assignments, five hours. Not for credit.

11.—ORE DRESSING; CONCENTRATION OF ORES. Forty assignments, five hours. Not for credit.

12.—ELEMENTARY MINERALOGY. Forty assignments, five hours' College or Engineering credit.

13.—GENERAL GEOLOGY. Forty assignments, five hours' College or Engineering credit.

14.—ECONOMIC GEOLOGY. Forty assignments, five hours' College or Engineering credit.

15.—REINFORCED CONCRETE CONSTRUCTION. Forty assignments, five hours. Not for credit.

16.—AUTOMOBILE ENGINEERING. Forty assignments, five hours. Not for credit.

ENGLISH.

1.—RHETORIC AND ENGLISH COMPOSITION. Forty assignments, five hours' College or Engineering credit.

2.—NARRATION AND DESCRIPTION. Forty assignments, five hours' College credit.

3.—ENGLISH LITERATURE. Forty assignments, five hours' College credit.

4.—HISTORY OF ENGLISH LITERATURE. Forty assignments, five hours' College credit.

5.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Forty assignments, five hours' College credit.

6.—TYPES OF LITERATURE. Forty assignments, five hours' College credit.

7.—AMERICAN LITERATURE. Twenty-four assignments, three hours' College credit.

8.—VICTORIAN LITERATURE. Forty assignments, five hours' College credit.

9.—HISTORY OF THE ENGLISH DRAMA. Twenty-four assignments, three hours' College credit.

10.—ELEMENTARY OLD ENGLISH (ANGLO-SAXON). Twenty-four assignments, three hours' College credit.

11.—ELEMENTARY MIDDLE ENGLISH. Twenty-four assignments, three hours' College credit.

12.—BROWNING. Twenty-four assignments, three hours' College credit.

13.—MODERN ENGLISH GRAMMAR. Sixteen assignments, two hours' College credit.

14.—ELIZABETHAN DRAMA. Exclusive of Shakspeare. Twenty-four assignments, three hours' College credit.

ENTOMOLOGY.

1.—INTRODUCTORY ENTOMOLOGY. Forty assignments, five hours' College credit.

2.—THE ROLE OF INSECTS IN THE SPREAD OF DISEASE. Sixteen assignments, two hours. Not for credit.

3.—APPLIED ENTOMOLOGY. Sixteen assignments, two hours' College credit.

4.—SYSTEMATIC ENTOMOLOGY. Sixteen assignments, two hours' College credit.

GERMAN.

- 1.—BEGINNING GERMAN. Forty assignments, five hours' College or Engineering credit.
- 2.—GERMAN II. Forty assignments, five hours' College credit.
- 3.—GERMAN III. Forty assignments, five hours' College credit.
- 4.—GERMAN IV. Forty assignments, five hours' College credit.
- 5.—SCHILLER'S DRAMAS. Forty assignments, five hours' College credit.
- 6.—THE CLASSIC DRAMA. Forty assignments, five hours' College credit.

GREEK.

- 1.—ELEMENTARY GREEK. Forty assignments, five hours' College credit.
- 2.—XENOPHON'S ANABASIS. Forty assignments, five hours' College credit.
- 3.—HOMER'S ILIAD. Twenty-four assignments, three hours' College credit.

HISTORY.

- 1.—AMERICAN HISTORY. Forty assignments, five hours' College credit.
- 2.—ENGLISH HISTORY. Forty assignments, five hours' College credit.
- 3.—AMERICAN GOVERNMENT. Forty assignments, five hours' College credit.
- 4.—MUNICIPAL GOVERNMENT. Twenty-four assignments, three hours' College credit.
- 5.—MODERN EUROPEAN HISTORY I. Twenty-four assignments, three hours' College credit.
- 6.—MODERN EUROPEAN HISTORY II. Twenty-four assignments, three hours' College credit.

JOURNALISM.

- 1.—THE THEORY AND PRACTICE OF ADVERTISING. Twenty-four assignments, three hours' College credit.
- 2.—THE NEWSPAPER. Twenty-four assignments, three hours' College credit.
- 3.—THE SHORT STORY. Twenty-four assignments, three hours' College credit.

LATIN.

- 1.—ELEMENTARY LATIN. Forty assignments, one unit of entrance credit.
- 2.—CÆSAR. Forty assignments, one unit of entrance credit.
- 3.—CICERO'S ORATIONS. Forty assignments, one unit of entrance credit or five hours' College credit.

4.—VERGIL'S *ÆNEID*. Forty assignments, one unit of entrance credit or five hours' College credit.

5.—PREPARATORY PROSE COMPOSITION. Twenty-four assignments. No credit.

6.—CICERO'S *DE SENECTUTE*, AND PROSE COMPOSITION. Twenty-four assignments, three hours' College credit.

7.—HORACE'S *ODES*. Twenty-four assignments, three hours' College credit.

8.—PROSE COMPOSITION. Sixteen assignments, two hours' College credit.

MATHEMATICS.

1.—ELEMENTARY ALGEBRA (Part A). Forty assignments, one unit of entrance credit.

2.—ELEMENTARY ALGEBRA (Part B). Twenty assignments, one-half unit of entrance credit.

3.—PLANE GEOMETRY. Forty assignments, one unit of entrance credit.

4.—SOLID GEOMETRY. Twenty assignments, one-half unit of entrance credit.

5.—PLANE TRIGONOMETRY. Sixteen assignments, two hours' College or Engineering credit.

6.—COLLEGE ALGEBRA. Twenty-four assignments, three hours' College or Engineering credit.

7.—ANALYTIC GEOMETRY. Thirty-two assignments, four hours' College or Engineering credit.

8.—PRACTICAL MATHEMATICS FOR ARTISANS. Forty assignments, five hours. No University credit.

MINERALOGY AND GEOLOGY.

1.—ELEMENTARY MINERALOGY. Forty assignments, five hours' College or Engineering credit.

2.—GENERAL GEOLOGY. Forty assignments, five hours' College or Engineering credit.

3.—ECONOMIC GEOLOGY. Forty assignments, five hours' College or Engineering credit.

PHARMACY.

1.—INTRODUCTORY PHARMACY. Twenty assignments, two and one-half hours' Pharmacy credit.

2.—ORGANIC MATERIA MEDICA. Twenty assignments, two and one-half hours' Pharmacy credit.

3.—PHARMACY PHYSIOLOGY. Twenty assignments, two and one-half hours' Pharmacy credit.

4.—SHORT COURSE IN PHARMACY. Forty assignments each in chemistry, materia medica and pharmacy through correspondence, covering two calendar years; and, optional with the student, two Summer Sessions of six weeks each in the

laboratories at Lawrence. This course is to prepare the student for the state examination for a certificate as Registered Pharmacist.

PHILOSOPHY.

- 1.—ELEMENTARY PSYCHOLOGY. Twenty-four assignments, three hours' College credit.
- 2.—LABORATORY PSYCHOLOGY. Sixteen assignments, two hours' College credit.
- 3.—INTRODUCTION TO PHILOSOPHY. Sixteen assignments, two hours' College credit.
- 4.—HISTORY OF ANCIENT PHILOSOPHY. Twenty-four assignments, three hours' College credit.
- 5.—HISTORY OF MEDIÆVAL AND MODERN PHILOSOPHY. Twenty-four assignments, three hours' College credit.
- 6.—ETHICS. Forty assignments, five hours' College credit.

PHYSICS.

- 1.—ELEMENTARY PHYSICS. Twenty-four assignments, three hours' College credit.
- 2.—MECHANICS AND HEAT. Thirty-two assignments, four hours' College or Engineering credit.
- 3.—SOUND, LIGHT, ELECTRICITY AND MAGNETISM. Thirty-two assignments, four hours' College or Engineering credit.
- 4.—MECHANICS AND HEAT. Twenty-four assignments, three hours' College credit.
- 5.—SOUND, LIGHT, ELECTRICITY AND MAGNETISM. Twenty-four assignments, three hours' College credit.
- 6.—THEORY OF ELECTRICITY AND MAGNETISM. Twenty-four assignments, three hours' College credit.

PHYSIOLOGY.

- 1.—ELEMENTARY PHYSIOLOGY. Forty assignments, five hours' College credit.
- 2.—GENERAL PHYSIOLOGY. Forty assignments, five hours' College credit.
- 3.—PHARMACY PHYSIOLOGY. Twenty assignments, two and one-half hours' Pharmacy credit.

PUBLIC SPEAKING.

- 1.—ARGUMENTATION. Twenty-four assignments, three hours' College credit.
- 2.—THE COMPOSITION OF PUBLIC ADDRESSES. Twenty-four assignments, three hours' College credit.

ROMANCE LANGUAGES.

- 1.—ELEMENTARY FRENCH (Part I). Forty assignments, five hours' College or Engineering credit.
- 2.—ELEMENTARY FRENCH (Part II). Forty assignments, five hours' College or Engineering credit.

3.—MODERN FRENCH PROSE. Twenty-four assignments, three hours' College credit.

4.—FRENCH COMPOSITION. Sixteen assignments, two hours' College credit.

1.—ELEMENTARY SPANISH (Part I). Forty assignments, five hours' College or Engineering credit.

2.—ELEMENTARY SPANISH (Part II). Forty assignments, five hours' College or Engineering credit.

1.—ELEMENTARY ITALIAN. Forty assignments, five hours' College or Fine Arts credits.

SOCIOLOGY.

1.—ELEMENTS OF SOCIOLOGY. Twenty-four assignments, three hours' College credit.

2.—SOCIAL PATHOLOGY. Sixteen assignments, two hours' College credit.

ZOOLOGY.

1.—INTRODUCTORY ZOÖLOGY. Forty assignments, five hours' College credit.

53.—HISTOLOGY. Forty assignments, five hours' College credit.

HIGH-SCHOOL BRANCHES.

ENGLISH.

First year.
Second year.
Third year.
Fourth year.

LATIN.

Beginning.
Cæsar.
Cicero.
Vergil.

MATHEMATICS.

Elementary Algebra ($1\frac{1}{2}$ years).
Plane Geometry (1 year).
Solid Geometry ($\frac{1}{2}$ year).
Plane Trigonometry ($\frac{1}{2}$ year).

HISTORY.

Ancient.
Mediæval and Modern.
English.
American.

GERMAN.

First year.
Second year.
Third year.

FRENCH.

First year.

PSYCHOLOGY ($\frac{1}{2}$ year). METHODS AND MANAGEMENT ($\frac{1}{2}$ year).

2. Department of Lecture-Study.

Every year the authorities of the University of Kansas receive requests from various sources for lectures and addresses by members of the Faculty. Such requests come from high schools and colleges, religious bodies, commercial, professional and technical associations, educational associations, clubs and literary societies, alumni reunions, and lecture committees.

This lecture work, which has necessarily in the past been done in a more or less desultory and haphazard manner, under the general title of University Extension, has now been placed upon a permanent basis as one of the four departments of the University Extension Division. While single independent lectures will be offered as before for entertainment, information and culture, the emphasis of the Department's efforts will be placed upon organizing courses or series of lectures which may be offered to serious-minded students as affording, at least approximately, the intellectual discipline and information and cultural value of regular University work in residence. Such courses of lectures will cover a general topic and will closely parallel in range and in character of work the regular classroom courses in residence.

By action of the University Council, the minimum length of a regular University Extension course is defined as six lectures. Of members of University Extension classes who are candidates for credit will be required, besides attendance at lectures, additional work prescribed by the lecturer, to include reference and other reading, conferences and examinations; and the maximum credit granted upon the satisfactory completion of such a course will be one semester hour. For such a course of six lectures the fee will be \$60 and the lecturer's expenses. With the consent of the department concerned, students who are candidates for the master's degree may count *in absentia* work done in Extension courses given by members of the University Faculty to the extent of twelve hours, allowing two hours for each course of twelve lectures.

A bulletin descriptive of the single lectures and courses now offered to Kansas communities will be sent to any address on request. This bulletin contains full information as to terms, organization, methods of procedure, credits and other details.

3. Department of General Information and Welfare.

This Department of the University Extension Division has been organized with the view of making knowledge of all sorts more generally available to the people of Kansas. The results of original research and investigation are generally published either in scientific journals or in monographs of learned societies, or in the bulletins of the various departments at Washington. In any one of these cases the man who wants information on any particular subject is generally not in touch with these various sources of publications, and even when he is, all too frequently the matter of the bulletin or article is couched in such technical language as not to be easily understood by the untrained reader.

The business of this Department is to gather together all sorts of materials that contain information of value or of interest to the citizen of the state, whether he be interested primarily in problems of business, finance, sociology, municipal government, sanitation, education, pure food, or any one of a hundred topics that touch every man's life vitally in his relations with his fellow men, with his community and his commonwealth. This documentary material is classified and filed for reference and made readily available to any one who desires to make use of it. The Department itself also issues bulletins on public questions.

MUNICIPAL REFERENCE BUREAU.

In 1910 there was formed under this Department a bureau of municipal research, which attempts to do for city officials and public-spirited citizens what a legislative reference library does for legislators. This bureau acts as a clearing-house for information and ideas concerning all kinds of municipal problems, such as those concerned with city charters, sanitation, water-works and other public utilities, franchises, uniform accounting, etc. The experiences of cities all over the country are brought together and placed at the disposal of Kansas municipalities, that they may profit both by the mistakes and by the successes of others. Copies of successful city ordinances and meritorious municipal regulations are obtained and kept on file, to be sent out to inquiring city officers. By coöperation with the Faculty of the Law School, the Engineering School, and the College Department of Political Science, the Municipal Reference Bureau is also enabled to act as an information bureau for the benefit of city officials.

In connection with the Municipal Reference Bureau, a League of Kansas Municipalities has been organized. The membership of this league is made up of Kansas cities, whose officials meet in convention for two days each year to discuss municipal problems and to exchange ideas on city administration and government. The proceedings of each annual convention are issued in pamphlet form. The secretary-treasurer of the league is the director of the Extension Division. Between conventions the officials of the membership cities make large use of the Mu-

municipal Reference Bureau as a clearing-house of municipal information. Fifty-nine Kansas cities hold membership in the league for the year 1912-'13.

WOMEN'S CLUBS.

This Department tenders its services to any club as an organization or to the individual members. This service is rendered in the following ways: by preparing club programs for a season's work; by furnishing outlines for definite courses of study; by giving references and bibliography on any proposed subject of study; by furnishing an individual who has to prepare a club paper an outline and references to reading matter on the subject chosen. To a limited extent, reading matter can be lent in the form of clippings, documents, and magazine articles collected in package libraries.

PACKAGE LIBRARIES.

For the benefit of those seeking reading matter on subjects of current or general interest, loan package libraries have been devised. These are collections of magazine articles, monographs, extracts from the Congressional Record, bulletins, newspaper clippings and other printed matter. Each package library treats of one subject in a popular way. The material is not bulky, and may usually be sent by mail. Citizens of the state find these libraries useful in preparing for debates or for club papers. High-school Seniors have made large use of them in the preparation of their graduation orations or essays. These libraries are sent out as loans, to be retained for two weeks only, and no charge is made for the service. The only expense incurred by the borrower is the postage to and from the University. A list of topics on which package libraries may be obtained will be sent to any inquirer.

LANTERN SLIDES.

In 1912 the Department undertook a new enterprise—the sending out of loan collections of lantern slides to high schools and other educational institutions which are provided with lanterns. No charge will be made for this service, the borrowing school being expected to pay only transportation charges and the cost of replacing any broken slides. So far as possible and convenient, the slides will be sent out in collections of fifty on each subject. The subjects so far undertaken are as follows:

Cæsar's Helvetian Campaign.
Insect Pests of Kansas.
History of Chemistry.
Physical Geography.
Views of University of Kansas.
Astronomy.
Ancient Pompeii.
Virgil's *Æneid*.

Botany.
Wilhelm Tell.
English History.
Ancient Rome.
The Passion Play.
Following Great Men through Greece.
Conquering Tuberculosis.
Our Bird Friends.

It is now planned to include with each collection of slides a syllabus, or running commentary, on the slides, and from one to three books of reference. The Department hopes to add to these collections as the demand arises.

CIVIC AND SOCIAL CENTERS.

The purpose of the civic- and social-center movement is the development of a more intelligent public spirit through the wider use of the schoolhouses of the state—the people's own clubhouses. Not being used more than forty per cent of their available time, these buildings represent a great economic waste to the state. The social-center plan is to promote the use of this school property, valued at over twenty million dollars, for the free discussion of public questions and for all other wholesome civic, educational and recreational activities. This will not interfere, however, with the primary purpose of the school buildings—the education of the young people of the state.

The Extension Division of the University will be glad to lend assistance in the organization and promotion of these civic and social centers by furnishing expert advice on organization and promotion, by sending lists of topics and questions for discussion for civic clubs, parent-teacher associations, etc., lists of local sources, with subjects, extension lectures, and material on questions for debates, papers, etc. Any Kansas community which is ready to undertake an organization looking to the wider use of the school plant, and which requires the personal assistance of an adviser on the ground, may obtain the services of one without charge by addressing the University.

4. Department of Debating and Public Discussion.

One of the best means of encouraging the earnest and candid study of public questions is the formation of debating societies. For that reason, no village should be without such an organization, and for a high school or college to be without one should be as great an anomaly as to be without a library.

But debating to be most valuable should not be purely academic, but should deal with topics of current popular interest. Not "Railway Travel versus Steamship Travel," or "The Pen is Mightier than the Sword," but "Popular Election of Senators," "Postal Savings Banks," "Bank Guaranty," and similar topics, should be discussed.

But the difficulty with debating on these subjects lies in the finding of material and information. The Department of Debating and Public Discussion locates material on all these current topics and puts the results into bulletins in the form of references to books, magazines, and other periodicals containing the required matter. Moreover the material itself is gathered together in the form of clippings, pamphlets and magazine articles and sent out as a loan collection. These package libraries have

proved themselves very useful in providing debaters with the needful information. In addition, this Department will help high-school authorities and others in the forming of debating societies and debating leagues, as well as in the training of debaters.

The Kansas High School Debating League, composed of fifty or sixty of the leading high schools of the state, is one of the results of the activity of this Department in encouraging debating. This organization has provided a way whereby a high-school debating team may win its way through a district championship up to the championship of the state.

The Department has issued a bulletin on debating and a bulletin containing references and bibliographies on the questions to be argued by the Debating League. It stands ready to assist with references or collected material any other organization interested in debate.

Correspondence is invited from all those who are interested in forming debating societies, whether of young people or adults, for the discussion of public questions.

All communications should be addressed to the University Extension Division, The University of Kansas, Lawrence, Kan.

PART IV.

Institutions Connected with the University
and Under its Control.

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THE LIBRARIES.

CARRIE M. WATSON, Librarian.
EDITH M. CLARKE, Cataloguer.
CLARA S. GILLHAM, Loan Desk Assistant.
MARY M. SMELSER, Accession Assistant.
DORA RENN BRYANT, Reference Assistant.
MABEL THORNTON, Reference Assistant.
MARY A. COLLINS, Reference Assistant.
ANNA D. LEARNARD, School of Engineering Assistant.
ETHEL C. MORROW, School of Law Assistant.
SARAH EVELYN STANTON, School of Medicine.

The libraries of the University contain 83,255 volumes and 42,000 pamphlets. An annual appropriation of \$10,000 is devoted to the purchase of books, and during the year 1912-'13 about 5000 volumes and 200 pamphlets will be added. The books are selected with great care, and the reader is furnished with the latest and the best authorities in the various departments. When opportunity permits, rare and unusual books are secured. To these, under proper restrictions, the students may have access. The library is large enough to enable the student to prosecute research and to carry on original investigation. Source material, in American and European history, in the various language departments, in science, in mathematics and in other subjects is being constantly added, so that the investigator has ample facilities to carry on advanced original work. The library has been greatly strengthened during the last few years by the addition of many complete sets of journals of learned societies in the various departments of knowledge, and the current numbers of these journals are on file in the reading room.

THE UNIVERSITY LIBRARY.

The University library is in the Spooner Library Building, and is open every day in the year, Sundays and holidays excepted. Library hours are from eight A. M. to ten P. M. when the University is in session, and during vacation from eight A. M. to six P. M. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the Librarian, and must be returned at once, after notice is received.

BOOKSTACKS. There are five stories in the stack room of the library, each eight feet high, making all the books within easy reach. The stacks and the flooring of these rooms are of steel, making a fireproof depository for the books. Books are classified and arranged on the shelves by the Dewey system.

CATALOGUE. The catalogue of the library contains about 170,000 cards. It is arranged alphabetically both as to author and subject, and the author and subject cards are filed together. Cards are arranged in cases in the general reading room.

THE GENERAL READING ROOM. The general reading room is a large, comfortable, well-equipped and well-lighted room, on the main floor of the Spooner Library. It is furnished with 200 electric lamps. In this room are about 1000 volumes of general reference books, cyclopedias, dictionaries, Poole's Index to Periodical Literature, and other books which are of special value for reference purposes.

DEPARTMENT READING ROOMS. The departments of Germanic and Romance languages, Latin, English and education have reading rooms on the lower floor of the library, and the departments of American and European history, sociology and economics have the whole of the upper floor of the building.

PERIODICAL ROOM. The University provides in this room 897 periodicals and publications of learned societies and 430 newspapers published in Kansas. The list of periodicals includes almost all of the important publications of America and Europe.

OFFICES, ETC. The office of the Librarian, the office of the cataloguer, and the accession room adjoin the general reading room, and on the lower floor are storerooms.

DEPARTMENT LIBRARIES. Besides the books in Spooner Library Building, there are eleven departmental libraries in the different buildings of the University. They are placed in close conjunction with the various laboratories and lecture rooms, so as to be immediately accessible to students in scientific work.

THE LAW LIBRARY. The law library is located in Green Hall. It contains 6500 volumes.

THE ENGINEERING LIBRARY. This is located in Marvin Hall. All works and periodicals relating to civil, mechanical and electrical engineering are placed here. A reading room is attached.

THE LAWRENCE PUBLIC LIBRARY.

The public library of Lawrence is open to students. This library contains 11,000 volumes, mainly of general literature and fiction, and 2050 public documents, and is a valuable supplement to the University library.

THE GYMNASIUM.

JAMES NAISMITH, A. B., M. D., *Director.*

W. O. HAMILTON, A. B.

MARGARET JOHNSON, M. D.

C. B. ROOT, A. B.

ARTHUR S. MOSSE.

LEONARD FRANK, LL. B.

MARGARET S. BECKWITH.

The Robinson Gymnasium, erected in 1907 at a cost of \$100,000, is one of the most modern and efficient gymnasiums west of Chicago. The three floors are equipped to accommodate the greatest number of students with the greatest variety of exercises. The basement floor has a locker room with special apartments for the various athletic teams, a system of shower-baths and a swimming pool. The first floor is equipped throughout with the most modern apparatus for general and special exercises. The second floor is used for all forms of athletic development, and for the various indoor games. In the gallery of this floor is an eighteen-lap track, upon which the greatest speed may be obtained with the least effort. Special rooms are equipped for fencing, boxing, wrestling, and handball.

The gymnasium is designed to benefit all students of the University, not only by giving an opportunity for general exercise and healthy recreation, but also by providing means of caring for the body, correcting faulty attitudes and functions, developing skill, physical judgment, and self-control. It provides, therefore, for specific training in view of any physical defects that may be remedied by proper care.

The department is under the supervision of a director who is himself a trained physician. He gives courses in physical education in the College designed especially for those who intend to teach. Associated with him are specialists in the various athletic sports.

EXAMINATIONS.

A thorough physical examination and measurement is offered each student and a record of results is kept as a basis for advice for exercise. The results are platted on charts, so that the student may compare himself with others and note the progress he is making. Those taking work in the gymnasium or on the athletic field must pass a satisfactory examination on entering the sport. At any time that the health of the student demands it,

he is debarred from taking part in any form of exercise that may injure him.

The director's office is equipped with apparatus for taking measurements and for making tests of health, skill, and strength.

The gymnasium is open from ten A. M. to six P. M. each day, Sundays excepted.

MCCOOK FIELD.

McCook Field, the gift of Col. John J. McCook, is situated only a short distance from the University and gives opportunity for all forms of outdoor athletics and sports. It contains a baseball diamond, a football field, a running track, and facilities for field athletics. A grand stand and bleachers seating 13,000 accommodate the spectators.

THE MUSEUMS.

FRANK STRONG, PH. D., *ex officio* Director of the Museums.

LEWIS L. DYCHE, A. M., M. S., Curator of the Mammals, Birds, and Fishes.

SAMUEL J. HUNTER, A. M., Curator of the Entomological Collections.

ERASMUS HAWORTH, PH. D., Curator of the Geological and Mineralogical Collections.

WILLIAM C. STEVENS, M. S., Curator of the Herbarium.

ALEXANDER M. WILCOX, PH. D., Curator of the Classical Museum.

HANDEL T. MARTIN, Assistant Curator of the Vertebrate Paleontological Collections.

CHARLES D. BUNKER, Assistant Curator of Mammals, Birds, and Fishes.

FRANCIS X. WILLIAMS, A. B., Assistant Curator of Entomological Collections.

The museums of the University are extensive and valuable. The collections were begun forty-one years ago by the late Dr. Francis H. Snow, and have been obtained chiefly during the past thirty-six years by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, Oregon, Washington, British America, Alaska, Greenland, and South America. The expeditions were mainly under direction of the late Dr. Francis H. Snow, Dr. Samuel W. Williston, Dr. C. E. McClung, Prof. Lewis L. Dyche, Prof. M. A. Barber, Mr. H. T. Martin, Mr. C. D. Bunker, and Mr. Frank Agrelius. Twenty-six of these expeditions were conducted by the late Doctor Snow personally. By means of the material thus accumulated, a system of exchanges has been established with leading institutions and naturalists in all parts of the United States and in other countries, so that the cabinets contain a very satisfactory representation of the fauna and flora, both recent and extinct, not only of the state of Kansas, but also the whole of North America, and to some extent of other continents. The collections are nearly all housed in the Museum of Natural History, completed in 1903, at a cost of \$75,000.

The University is now conducting a biological survey of the state, and through this means, in part, it is hoped to secure a complete representation of the animals and plants.

ENTOMOLOGY.

The foundation for these extensive collections is the Francis Huntington Snow collection, the result of numerous expeditions and frequent exchanges conducted by the late Doctor Snow. In the collections there are in all about 1000 types determined by leading specialists in the respective groups. The collections now comprise about 26,000 species and 300,000 specimens, representing all the different orders of insects.

The orders of Lepidoptera, Coleoptera, Diptera, Orthoptera and Hemiptera are especially well represented. In the Coleoptera there are over 10,000 species; the Melanopli in Orthoptera are fully represented; the collection of Coccidæ in Hemiptera afford an excellent series for study of North American forms. These collections are being augmented annually through the University Biological Survey, being an intensive and consecutive systematic survey of all forms found within the state, their distribution and biology. The collection, as a whole, is one of the largest connected with any educational institution in the United States.

The work in connection with the museum now affords opportunity for study to students throughout the entire year, in the summer months on the survey, and in the winter months on a continuation of the study of the material obtained throughout the summer. A series of monographs on Kansas forms have been prepared and others are in progress. It is expected that these will be brought together in uniform size and binding.

Specialists frequently visit these collections for recourse to the large representation of types, and such visitors are always welcome. In order to insure the preservation of "types" it has been deemed advisable to adopt the policy of retaining all "types" in the museum.

These collections are of further practical value to the people of the state in the determination of the injurious and beneficial insects and answers to numerous inquiries upon this subject.

The collections occupy a part of the second and third floors in the Museum of Natural History.

ZOOLOGY.

The collection of large mammals indigenous to the North American continent is very complete. The specimens include the more common and well-known animals of the United States, an excellent representation of the animals of the Atlantic coast as far north as Cape Sabine, and from the continent of Greenland. Also a series from the Pacific coast as far north as the Aleutian islands and from the interior of Alaska. This large collection is being placed on exhibition on the second floor of the Museum of Natural History. The large ponorama showing many groups of North American mammals has been brought almost to completion in the last year by Mr. Bunker and Mr. Rocklund, and descriptive pictures and labels afford a ready explanation of the exhibit. The collection occupies the entire floor, which is known

as "Mammal Hall." Besides the mounted specimens, there are 1300 mammals skulls and 1500 skins. New material is being added constantly, and mounted for study and exhibition.

The ornithological collections, which are carefully protected in mothproof cases, have been increased in the last few years from 4000 to 10,000 specimens, of which 2300 are mounted. There are about 900 species represented. During the last year a complete systematic catalogue has been prepared, and an entire rearrangement of the collections is in progress. Many of these are unmounted skins, furnishing ample material for laboratory study when fresh specimens can not readily be obtained. There is also a fine series of skeletons, representing species in size from the shrews and bats to elephants and whales.

A representative collection of marine invertebrates from the Atlantic and Pacific coasts and from Bermuda provides material for study and investigation. Very large additions to these collections were made by recent expeditions to Puget Sound.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

PALEONTOLOGY.

The collections in paleontology offer excellent facilities not only for instruction in general stratigraphic geology but also for special advanced work in systematic paleontology. The collections of invertebrates include about 2000 species, distributed among about 500 genera. They represent all of the principal geological formations, but are especially rich in Kansas forms. The numbers of genera and species from the chief geological groups are nearly as follows:

Tertiary, 80 genera, 200 species.

Cretaceous, 80 genera, 200 species.

Jurassic, 10 genera, 30 species.

Triassic, 25 genera, 75 species.

Permo-carboniferous, 60 genera, 750 species.

Devonian, 80 genera, 300 species.

Silurian, 75 genera, 250 species.

Ordovician, 90 genera, 250 species.

Cambrian, 20 genera, 30 species.

Through exchange, purchase and collecting, the number of specimens has been largely increased during the year. A complete catalogue is being prepared and will be ready for use in the near future.

The collection of fossil vertebrates is one of the largest in America, particularly in Cretaceous forms. From the Tertiary of Kansas, Wyoming and South Dakota, Oregon and Colorado nearly all the known genera are represented. Of the Cretaceous animals there are hundreds of specimens, including not a few of exceptional perfection and completeness. The specimens of birds and reptiles are particularly important and valuable. Altogether about 400 species of extinct vertebrates are represented in the museum.

Valuable additions are being made constantly to the collections, both of invertebrates and vertebrates, chiefly by field expeditions. During the last three summers the collection of Cretaceous fishes was much strengthened through additions made by expeditions to western Kansas. Recent expeditions to the Tertiary of Colorado and to the Carboniferous of Illinois have strengthened materially the museum in mammals and lower vertebrates. All the collections have been gone over and catalogues prepared, so that reference to the specimens is much easier. In order to render the collections as interesting and profitable as possible, the specimens have been supplied with descriptive labels, and a synoptic, or index, case has been placed at the entrance to the paleontology rooms. The collection occupies the most of the upper floor of the Museum of Natural History.

PALEOBOTANY.

The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have been before open for public inspection. These specimens were collected in Kansas, Oklahoma, Illinois and Oregon.

THE HERBARIUM.

The herbarium includes about 10,000 specimens, identified and labeled, of flowering plants, besides much material partly identified. The flora of Kansas and of the western Rocky Mountains is well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America and of North American lichens. The herbarium is housed in Snow Hall.

GEOLOGICAL COLLECTIONS.

The museum of economic and physical geology contains many hundred specimens. In economic geology there is a large collection of ores of various kinds, especially chosen to represent, first, the character of the ores, and second, the mode of ore formations. Specimens of almost all kinds of ores and other economic products, such as gypsum, coal, oil, etc., are included and arranged in accordance with the two ideas: first, of economic value, and second, of origin or formation. Specially to be mentioned in this connection is a very complete collection of lead and zinc ores and associated minerals from the Galena-Joplin district, which is the greatest field for mining zinc ore known in the world.

The petrographic collection contains about 2000 specimens of

crystalline rocks from all parts of the world, including an unusually large collection of granites, porphyrites and basic dike rocks from the area of crystalline rocks in Missouri. There is also a large and specially selected collection of crystalline rocks from New Hampshire, and another collection from the Lake Superior region.

The mineralogical collection is divided into two groups: first, a working collection for students in the mineralogical laboratory, and second, an exhibitiv collection for the museum. The former contains fair specimens and material for use in the laboratory, but representing all the leading classes of minerals, while the latter contains more pretentious and showy specimens, more generally interesting to the public.

THE CLASSICAL MUSEUM.

The classical museum contains full-sized plaster casts of the Hermes and Satyr of Praxiteles, the Venus of Melos, the so-called Theseus of the Parthenon, three Metopes and fifty-five feet of the frieze of the Parthenon, Varvakeion and Lenormant statuettes, and the Strangford shield of the Athena Parthenos, the Hegeso tombstone, the Orpheus relief, the Satyr and Mænad relief, the Borghese Warrior, the Discobolos of Myron as restored by Furtwängler, Augustus in military dress, the so-called Germanicus, nineteen busts of Greek sculpture and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionios inscription.

Models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, and the Victories of Paionios and Samothrace.

Facsimile reproductions of the two Valphio gold cups, the so-called Nestor's cup, the lion-hunt sacrificial knife, a gold mask, a diadem, and a series of smaller gold objects found in Mycenæan graves.

Relief maps of Athens and Rome.

Laloux's restorations of Olympia, Defrasse's restorations of Epidaurus, Pontremoli's restoration of Pergamon, and Weichardt's restorations of Pompeii.

Stuart and Revett's *Antiquities of Athens*, 363 plates; Penrose's *Athenian Architecture*, 47 plates; Inwood's *Erechtheum*, 39 plates; Bohn's *Propylæa*, 21 plates; Ross, Schaubert and Hansen's *Athena Nike Temple*, 13 plates; Michaelis's *Parthenon*, 15 plates; Cockerell's *Temples of Ægina and Bassæ*, 37 plates; Koldewey and Puchstein's *Temples of Lower Italy and Sicily*, 29 plates; Major's *Temples of Pæstum*, 25 plates; Adler's *Mausoleum*, 5 plates; Le Roy's *Ruins of the most beautiful monuments of Greece*, 60 plates; Fenger's eight colored plates of Doric architecture; the plates of the final reports of the excavations at Assos and Delphi, as far as they have yet been published; Piranesi's large engravings of the columns of Trajan and Marcus Aurelius; twelve photographs of architectural models in the Metropolitan Museum, New York.

A complete set (640 so far) of Brunn's plates of Greek and

Roman sculpture; 55 Braun photographs of the Elgin marbles; 139 plates of the Sabouroff collection of sculpture, terra-cottas, vases, and bronzes; Furtwängler's ancient gems, 67 plates; 82 plates of the silver vases and utensils found at Hildesheim and Boscoreale; 6 colored plates of Odyssey paintings found in Rome; Dodwell's 30 views of Greece, in color; Lau's and Genick's 84 colored plates of Greek vases; 27 colored plates of Greek vases in the British Museum; Furtwängler and Loeschke's Myocenæan vases, 49 plates; Harrison and MacColl's Greek vases, 43 plates; Furtwängler and Reichhold's large plates of Greek vases, as far as they have been published, 140; 11 colored plates of Greek and Etruscan terra-cotta sarcophagi in the British Museum; Hermann's reproductions of antique paintings (77 so far); Preller's four cartoons of wall-paintings of ancient Greek landscapes in the Albertinum at Dresden; 30 plates of Monumenti Inediti and Antike Denkmæler vases, sculpture, and architecture; 650 photographs illustrating Roman topography and life.

A facsimile of the whole of the Bacchylides manuscript; 36 plates of other Greek manuscripts; 25 facsimiles of Biblical manuscripts in the British Museum; 30 facsimiles of the Flinders Petrie Egyptian Greek papyri; 62 plates of Latin manuscripts; Roehl's collection of oldest Greek manuscripts, many of them in facsimile.

Baumeister's monuments of classical antiquity, 95 plates and 2400 illustrations; 2000 stereopticon slides of Greek and Roman views, portraits, buildings, statues, paintings, vases, and manuscripts.

The classical museum is located in Fraser Hall, south wing, second floor.

GEOLOGICAL SURVEY.

FRANK STRONG, PH. D., Director, *ex officio*.
 ERASMUS HAWORTH, PH. D., State Geologist.
 EDGAR H. S. BAILEY, PH. D., Chemist.

THE UNIVERSITY GEOLOGICAL SURVEY OF KANSAS was organized by the Board of Regents of the University in 1894, under the general authority given them by law, and was given especial sanction and authority by legislative enactment from 1897 to 1907, when the present law was passed. The object of the Survey is to accomplish a geological survey of the state as rapidly as possible, giving a complete exposition of the geological and mineralogical resources of the state, including all subjects of economic and scientific importance.

By provision of law the Chancellor of the University is *ex officio* Director of the Survey, and the head of the Department of Geology and Mining is superintendent and state geologist. It is contemplated that the work will be done principally by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The results already obtained have been of great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, and clay manufactories.

Work was begun on the survey in 1893 and has been carried forward steadily ever since. Throughout this time from five to twelve assistants have been doing field work every summer vacation. The laboratory work and literary work have been done principally throughout the remaining nine months of the year. The subjects thus far studied and reported upon are given in the following list of publications. Other subjects have been studied to a great extent, but not yet sufficiently for the completion of a report.

PUBLICATIONS OF THE STATE GEOLOGICAL SURVEY.

The Survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges. (Those marked with a star are out of print.)

- | | | |
|--------|---|-----------|
| Volume | I, 1896—Reconnaissance Report on General Stratigraphy of Eastern Kansas.* | |
| Volume | II, 1897—General Geology of Western Kansas.* | |
| Volume | III, 1898—Special Report on Coal..... | 28 cents. |
| Volume | IV, 1898—On Upper Cretaceous Paleontology.* | |
| Volume | V, 1899—Special Report on Gypsum and Gypsum Cement Plasters..... | 16 cents. |

Volume VI, 1900—Carboniferous Invertebrates and Cretaceous Fishes	28 cents.
Volume VII, 1902—Mineral Waters	20 cents.
Volume VIII, 1906—Special Report on Lead and Zinc..	28 cents.
Volume IX, 1909—Special Report on Oil and Gas....	32 cents.
Volume X, 1910—A Special Report on Mine Explosions, in preparation.	
Report on Mineral Resources of Kansas for 1897.....	4 cents.
Report on Mineral Resources of Kansas for 1898.*	
Report on Mineral Resources of Kansas for 1899.....	4 cents.
Report on Mineral Resources of Kansas for 1900, 1901,	5 cents.
Report on Mineral Resources of Kansas for 1902.*	
Report on Mineral Resources of Kansas for 1903.....	3 cents.

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil and gas fields of the state and a preliminary catalogue of invertebrate fossils found in the Carboniferous age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of vertebrate paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other points of a like nature.

Volume IV is devoted entirely to the paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plasters, giving the results of about three years' investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology, and is occupied jointly by Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted entirely to the mineral waters of the state, and gives a description not only of the mineral waters of Kansas, but of mineral waters in general.

Volume VIII is a special report on lead and zinc.

Volume IX is a special report on oil and gas, with many maps and geological sections and a lithographic geologic map of the state.

Volume X is a special report on coal-mine explosions, giving a history and tabulation of all recorded mine explosions of the world, and their causes, when known, followed by extensive study of mine gases, coal dust, modes of ignition and other causes leading to mine explosions and mine fires, with suggestions and recommendations for prevention of the same. Ready soon.

The series of annual reports began with a report on the min-

eral productions of the state for 1897 and was continued to 1903. The reports for 1900 and 1901 were issued jointly. Largely they are repetitions of the same subjects, as each of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

For the years 1910 and 1911 work was confined principally to the completion of a stratigraphic and paleontologic survey of the Permian of Kansas and to an exhaustive study of the clays of the state. Neither of these is yet completed. The legislature of 1911 made a special appropriation for the erection and equipment of a clay-testing laboratory. After its completion the Survey will be prepared to test all clays of the state by all the methods known to science and the arts. It is proposed to prosecute the work of testing Kansas clays as rapidly as possible.

ENGINEERING EXPERIMENT STATION.

STATION STAFF.

FRANK STRONG, PH. D., President.
FRANK O. MARVIN, A. M., Director. Civil Engineering.
EDGAR H. S. BAILEY, PH. D., Chemical Engineering.
ERASMUS HAWORTH, PH. D., Mining Engineering.
PERLEY F. WALKER, M. M. E., Mechanical Engineering.
GEORGE C. SHAAD, E. E., Electrical Engineering.

PURPOSES.

This department of University activity has been established for two reasons: First, to correlate and group together in a more systematic way the results of scientific investigation that heretofore has been done under the various departments; second, to foster, enlarge, and direct this work, especially along lines of value to this state, and to supervise the publication and distribution of the results of engineering and industrial research work.

Considerable work of practical value has already been done in the past few years, investigations of Kansas building stone, of Kansas stone for macadam roads, of paving brick, the action of repeated stresses on concrete, of the shearing strength of concrete, of the properties of hydraulic cements, of the purification of sewage, of variations in the flow of sewage, of the waters of the state, both surface and underground, of the composition of Kansas oils and gases, of the flow of gases through nozzles, of the lubricating value of Kansas oils, of the application of chemistry to manufacturing industries, etc.

Much of this kind of material lies incomplete and unused in department records for the lack of funds to complete the investigations and an efficient organization to stimulate the work and bring out results for the public benefit.

The field to be covered, and in which there are many questions arising that can be investigated to the best advantage in the well-equipped laboratories of the University, is a very large one, including such subjects as structural materials, coals, ores of lead and zinc, gypsum, clays, hydraulic cements, oils, gases as they are used for illuminants or as they produce explosions in mines or elsewhere, the waters of the state, water supplies for potable and mechanical uses, the character and disposal of sewage and other wastes, the influence of bacterial action on the

design and operation of public sanitary works, hydraulic power plants, applications of electricity to service, chemistry in the arts, and many other lines of investigation of direct utility. Several lines of investigation of problems affecting engineering work are under way.

The bulletins of the Station are issued in a special series with a consecutive numbering, the initial number having been published in 1910.

All communications with reference to the work of the Station or its publications should be addressed to the Director.

PART V.

Degrees Conferred and Lists of Students.

(431)

DEGREES CONFERRED.

JUNE, 1912.

MINING ENGINEER.

Frank Hollister Blackmar, *South America*

ELECTRICAL ENGINEER.

George H. Ahlborn, *Washington, D. C.*

MASTER OF SCIENCE.

Theodore H. Aschmann, Inman.
John Tennyson Myers, Eskridge.

MASTER OF ARTS.

Arthur Floyd Beal,	Lawrence.
Cora Belle Beatty,	Osborne.
Florence M. Beatty,	Osborne.
Marguerite Bliss,	Wichita.
Thornton Lynn Bouse,	Holton.
Hazel Elizabeth Branch,	Wichita.
Martin Kahao Brooks,	Lawrence.
Carl Richards Brown,	Lawrence.
E. Eleanor Carothers,	Kingman.
Ermine Ethel Clarke,	Lawrence.
Bertha Elizabeth Colline,	McPherson.
Hallie Ernest Crow,	Wichita.
Jesse Raymond Derby,	Winfield.
James Thomas Faulkner,	Lansing.
Edward George Fischer,	<i>Wheaton, Ill.</i>
Myrtle Greenfield,	Sabetha.
Charles Merl Gruber,	Hope.
Horace Gunthorp,	Lawrence.
Sophia Gerhardine Harms,	Wichita.
George Robinson Hiatt,	Lawrence.
Peter C. Hiebert,	Hillsboro.
Hulda L. Ise,	Lawrence.
Louise Thomas Jones,*	<i>Oskaloosa, Iowa</i>
Evadne Mary Laptad,	Lawrence.
Thomas Amory Lee,	Topeka.
Raymond Foster Miller,	Emporia.
Merle M. Moore,	Ottawa.
Robert Tyler McCluggage,	Derby.
Charles Rudolph Nesbitt,	Garnett.
Archie Dayton Power,	Baldwin.
Cornelius C. Regier,	Moundridge.
Emil R. Riesen,	Newton.
Donna Clare Rose,	Holton.
Louis A. Rufener,	Elmo.

* Assigned to class of 1911.

MASTER OF ARTS—concluded.

Francis Deane Schnacke,	Topeka.
Mattie Frances Smith,*	Sterling.
Effie Louise Steven,	Lawrence.
Sadie Malinda Stone,*	Lawrence.
Floyd B. Streeter,	Lawrence.
Elizabeth Geraldine Stuart,	Lawrence.
Wilbur Emanuel Tilberg,	Dwight.
David Henry Wenrich,	Lawrence.
Orville T. Wilson,	Emporia.

BACHELOR OF ARTS.

Maelynette Aldrich,	Salina.
Homer Augustus Alexander,	Nickerson.
Earl F. Ammons,	Arkansas City.
Brownie Angle,	Kansas City.
Carleton H. Armsby,	Council Grove.
Nan Ruth Armstrong,	Lawrence.
Lucille Margaret Arnold,	Ashland.
Carolyn Isabel Babb,	Wichita.
Lily Gazzelle Baker,	Cherryvale.
Rachel A. Baumgartner,	Halstead.
Arthur F. Beal,*	Lawrence.
Harry Calvin Berger,	Halstead.
Adolph Henry Beyer,	Inman.
George D. Bischoff,	Washington.
Elva Marian Black,	Ottawa.
Gertrude Blackmar,*	Lawrence.
J. Carrol Braden,*	Rocky Ford, Colo.
Frederick W. Bruckmiller,	Kansas City, Mo.
Everett Brumage,	Beloit.
Helen Salisbury Burdick,	Lawrence.
Leona Camilla Calene,	Sylvan Grove.
Carl Leslie Cannon,	Smith Center.
Faye Carmichael,	Lawrence.
Madge Carmichael,	Lawrence.
Weston William Carpenter,	Lawrence.
Ledru G. Carter,	Lawrence.
Villa Crawford,	Lawrence.
Walter V. Cullison,	Mulberry.
Bessie Irene Curtiss,	Lawrence.
Bertha Louise Dack,	Lyons.
Nellie Marvin Dalton,	Lawrence.
Floyd Brown Danskin,	Aulne.
M. Christina David,	Bonner Springs.
Ellis Webb Davidson,	Lawrence.
Don L. Davis,	Kansas City.
Philip Lind Davis,	Lawrence.
Esther Degen,	Kansas City, Mo.
Elmer H. Dittmar,	Clay Center.
Katherine Dolman,	Lawrence.
Mary Eleanor Draper,	Oswego.
Clarence Earnest,	Washington.
Walter Maynard Eastman,	Lawrence.
Gladys Elizabeth Elliott,	Lawrence.
Dena Hope Ellis,	Lawrence.
Katharine Ellis,	Pratt.
Paul Peter Ewald,	Lawrence.
Edmond Everett Ewers,	Topeka.
Charles Clement Fairchild,	Kingman.
Chester George Farnsworth,	Wichita.
Myrtle May Ferguson,	Lawrence.
Angeline Figley,	Lawrence.
Gertrude Figley,	Lawrence.
Nancy Marie Fisher,	Lyons.
Frank Foncannon,	Emporia.

BACHELOR OF ARTS—continued.

Herbert E. Ford,	Lawrence.
Nora E. Frederick,	Arcadia.
Will French,	Pittsburg.
Jesse T. Gephart,	Oskaloosa.
Gale Galbaugh Gossett,	Kansas City, Mo.
Myrtle Greenfield,	Sabetha.
Alfred Alford Griffin,	Lawrence.
Glendale Griffiths,	Lawrence.
Tekla Cecilia Gustafson,	Lawrence.
Edith I. Haight,	McPherson.
Jean George Hall,	Waterville.
Anna Hansine Hanson,	Lawrence.
Elizabeth Katherine Heavey,	Leavenworth.
Robert S. Heizer,*	Osage City.
James Edgar Henshall,	Osborne.
Helen Hill,	Oswego.
Walter Leonard Huffman,	Enterprise.
Charles W. Hooper,*	Great Bend.
Arthur Spencer Humphrey,	Junction City.
Myrtle Humphrey,	Russell.
Myrtle Ethel Hyre,	Lawrence.
Pauline Ingels,	Lawrence.
Mary Ise,	Lawrence.
Ola Jackson,	Kansas City, Mo.
Delpha Johnson,	Randolph.
Mina Rae Johnson,	Norton.
Marion M. Johnston,	Lawrence.
Lucile Kellerman,	Kansas City, Mo.
Margaret Killarney,	Atchison.
Arthur Robert Kingsley,	Formoso.
Herman Schmidt Kliever,	Newton.
Edward Frederick Kohman,	Dillon.
Alfred Paul Krueger,	Atchison.
Charles Loucek Kubik,	Caldwell.
Kendall Laughlin,	Kansas City, Mo.
Zephyr C. Layne,	Argentine.
Fred E. Lee,*	Columbus.
Harvey C. Lehman,	Humboldt.
Leotos Lentz,	Wichita.
Benjamin Heim Leventhal,	Rosedale.
Ethel G. Luther,*	Kansas City.
Jean MacKinnon,*	Lawrence.
Otto Oscar Malleis,	Halstead.
Arthur E. Mallory,	Scott City.
Anna Robbins Manley,	Junction City.
Bess Jane McKittrick,	Wilson.
Sarah Rhoda Naylor,	Holton.
Earl Cleveland O'Roke,	Sabetha.
Clara Louise Osgood,	Parsons.
John Bowman Parker,	Altoona.
Rebecca Passon,	Lawrence.
Susie Phelan,	Holyrood.
Evalyn Ragsdale,	Smith Center.
Lulu Randel,	Corning.
Roy Rankin,	Lawrence.
Roscoe Royal Redmond,	Ottawa.
Cornelius C. Regier,*	Moundridge.
Jennie May Richardson,	Lawrence.
Worth Huff Rodebush,	Selden.
Myra Rogers,	Abilene.
C. Burton Root,†	Lawrence.
Mae Florence Rossman,	Olathe.
Bernice M. Ruhlandt,	Osawatomie.
Grace Russell,*	Lawrence.

† Assigned to the class of 1908.

BACHELOR OF ARTS—*continued.*

Patti Sankee,	Lawrence.
John Elden Sawhill,	Concordia.
Edwin Christian Schmitt,	Moundridge.
Bertha Sellards,	Lawrence.
Cyril Evan Sheppard,	Wellsville.
Albert Elwood Shirling,	<i>Kansas City, Mo.</i>
John Wiseman Shive,	Burrton.
Tillie Shklar,	Kiowa.
Margaret Siegel,	<i>Kansas City, Mo.</i>
Julia Anne Simms,	<i>Kansas City, Mo.</i>
Edward L. Small,	Cottonwood Falls.
Mary Euphemia Smart,	Ottawa.
Edna Maude Smith,	Smith Center.
Elsie Louise Smith,	Leavenworth.
Roy Esmond Smith,	Winchester.
George Samuel Snoddy,	Emporia.
Jeanette Spalding,	<i>Kansas City, Mo.</i>
Nelson Timothy Stephens,	Lawrence.
Mildred Maurine Manley,	Iola.
Lucie Miles March,	Lawrence.
Nell Minnie Martindale,	Lawrence.
Herbert Spencer Maxwell,	<i>Braddyville, Iowa.</i>
Rubey May Maynard,	<i>Kansas City, Mo.</i>
George Egbert Mensch,	<i>Kansas City.</i>
Orell Grace Meyers,	Olathe.
Ruth C. Miller,	Pratt.
Marie B. Miller,	Leavenworth.
William Vernon Miller,	Emporia.
Bertha E. Mix,	Tecumseh.
Leland Wightman Moore,	Ottawa.
Oreta Elizabeth Moore,	Lawrence.
Will A. Moore,	Chapman.
Carrie A. Morris,	<i>Oklahoma City, Okla.</i>
Inez Morris,	Tecumseh.
Florence Emera Morse,	Lawrence.
Nathaniel H. Morton,*	Tescott.
Winifred Morton,	Atchison.
Arthur Chauncey Moses,	<i>Kansas City, Mo.</i>
Lloyd Henry Mosser,	Hamlin.
Fay Cecilia Moys,	Lawrence.
Beulah V. Murphy,	Lawrence.
Oscar Roy Murray,	Herington.
Leota Lovina McFarlin,	Lawrence.
Robert Donald McKay,	Girard.
Hermione Archer Sterling,	Lawrence.
Helen K. Stevens,	Parsons.
John Thomas Stewart,	Wellington.
Ethel Lucile Stone,	Emporia.
George Harr Stuckey,	Formoso.
Arthur Theodore Swanson,	Randolph.
Edward Harrison Taylor,	Richmond.
Isabel Thomas,	<i>Kansas City, Mo.</i>
Helen Houghton Thomson,	Emporia.
Amy Elizabeth Tucker,	Wichita.
Catherine Tupper,	Lawrence.
Grace Pauline Ulrich,	Lawrence.
Mabel Grace Ulrich,	Lawrence.
Everett Waldo Vaughn,	Caldwell.
Josephine Walker,	Holton.
Florence Ada Wallace,	Phillipsburg.
Nan Edgarine Walton,	Leavenworth.
Harry Eugene Weaver,	Belleville.
Frank A. Wetmore,	Lawrence.
LeRoy Jay Wheeler,	Wa Keeney.
Mayme Wheeler,	<i>Guthrie, Okla.</i>
Grace Wilkie,	Wichita.

BACHELOR OF ARTS—concluded.

Lucile Hortense Wilkinson,	<i>Muskogee, Okla.</i>
Elizabeth K. Wilson,	<i>Kansas City, Mo.</i>
Faylor Scott Wilson,	<i>Wichita.</i>
Regina Woodruff,	<i>Lawrence.</i>

BACHELOR OF SCIENCE.

Oliver Lewellyn Andrews,	<i>Powhattan.</i>
Leslie Alonzo Baldwin,	<i>Kansas City, Mo.</i>
Fred Balocca,*	<i>Carbondale.</i>
Ray L. Bartlett,	<i>Lawrence.</i>
Edward P. Beck,*	<i>Pratt.</i>
Harry Veltman Becker,	<i>Ellsworth.</i>
John P. Boesche,	<i>Gaylord.</i>
Emerson Lester Bray,	<i>Kansas City, Mo.</i>
George Macmillan Brown,	<i>Pleasanton.</i>
Glenn Orrin Brown,	<i>Newton.</i>
Lawrence Leland Browne,	<i>Kansas City.</i>
Harley J. Burger,*	<i>Reserve.</i>
Murray Copes Conley,	<i>Oklahoma City, Okla.</i>
Charles Elmer Cubbison,	<i>Gardner.</i>
John Adrian Davenport, jr.,	<i>Lawrence.</i>
Elmer Dershem,	<i>Baldwin.</i>
Bert E. Dodge,	<i>Wichita.</i>
Ross H. Forney,	<i>Lawrence.</i>
Edward Lawrence Griffin,	<i>Lawrence.</i>
Robert George Hackman,	<i>Lawrence.</i>
Carl Falster Hanson,	<i>Geuda Springs.</i>
Volney Hewitt Hilford,	<i>Caney.</i>
Howard Herman Houk,	<i>Pittsburg.</i>
Thomas P. Humphrey,	<i>Mound Valley.</i>
Fred Emmett Johnston,	<i>Madison.</i>
Jacob Oscar Jones,	<i>Barrett.</i>
John H. Jonte,	<i>Parsons.</i>
Cleveland Loper,	<i>Topeka.</i>
Archibald Ranald MacKinnon,	<i>Lawrence.</i>
Charles Gilbert Martinson,	<i>Wichita.</i>
Orin Edward Marvel,	<i>Lawrence.</i>
Morton Glen Monroe,	<i>Fairview.</i>
Clare E. Moon,*	<i>Cottonwood Falls.</i>
Ross Isaac Parker,	<i>Kansas City, Mo.</i>
Glenn L. Pyle,	<i>Coldwater.</i>
Edmund Oliver Rhodes,	<i>Dodge City.</i>
Charles Junius Robinson,	<i>Topeka.</i>
Walter R. Schreiner,	<i>Frankfort.</i>
Harold King Shaw,	<i>Hiawatha.</i>
Guy Samuel Smith,	<i>Hiawatha.</i>
Ray Mohler Smith,	<i>Hiawatha.</i>
Charles Clay Spilman,	<i>McPherson.</i>
Thomas Pane Steeper,	<i>Lawrence.</i>
Edward Everett Stephens,	<i>Bethel.</i>
Carroll Ethelbert Teeter,	<i>Lawrence.</i>
Martin K. Thomen,	<i>Junction City.</i>
Randolph Josiah Tucker,	<i>Lyons.</i>
Charles Verne Waddington,	<i>Wichita.</i>
Harold Forney Wilson,	<i>Lawrence.</i>
Herbert L. Wilson,	<i>Lyndon.</i>
Hill P. Wilson, jr.,	<i>Lawrence.</i>

BACHELOR OF MUSIC.

Sylvia Daphne Alford,	Lawrence.
Blanche Ann Barkdull,	Lawrence.
Olive M. Buchanan,	Chanute.
Ruth Ethel Corle,	Alma.
Mona Newton Eberle,	Lawrence.
Audrey Harshberger,	Lawrence.
Mildred Hazelrigg,	Topeka.
Ethel Mary Hess,	Alma.
Jessie Holcomb,	Parsons.
Caroline Anna Ishmael,	Kiowa.
Josephine Yolande McCammon,	Lawrence.
Laura Sophie Pendleton,	Lawrence.
Cora Irene Reynolds,	Lawrence.
Lenna Ridenour,	Emporia.
Esther Geraldine Shaw,	Kansas City.
Bertha Marie Shuey,	Lawrence.

BACHELOR OF PAINTING.

Josephine Barkdull,	Lawrence.
Arta Priscilla Briggs,	Lawrence.
Neva June Foster,	Lawrence.
Geneva S. Ogden,	Lawrence.

CERTIFICATE IN EXPRESSION.

Bertha Eunice Burgess,	Douglass.
Hannah Eileen Mitchell,	Lawrence.
Ramona Swayne,	Wamego.

TEACHER'S CERTIFICATE IN PIANO.

Caroline Anna Ishmael,	Kiowa.
Leora Kuchera,	Belleville.
Edna Miller,	Leavenworth.
Mary Morin,	Lawrence.

TEACHER'S CERTIFICATE IN DRAWING AND PAINTING.

May Jordan,	Lawrence.
Nettie Smith,	Smith Center.

BACHELOR OF LAWS.

George Fawcett Beezley,	Girard.
George Dietrich Bischoff,	Washington.
John Bradley,	Wellington.
Edgar Wells Campbell,	Seneca.
Elmer Willoughby Columbia,	Chetopa.
Charles Cleveland Curtis,	Lawrence.
Rialdo Allen Darraugh,	Kansas City, Mo.
Vance Hinman Day,	Racine, Wis.
Arthur Herman Fast,	Baldwin.
Gilbert Harvey Frith,	Emporia.
William Edward Hamner,	Rosedale.
Jay Ransom Hannah,	Lawrence.
Harold E. Harlan,	Lawrence.
Clyde Bernard Harrold,	Ponca City, Okla.
George Thurman Hill,	Independence.
Stanley Milo Hoisington,	Newton.
Frank M. Hyames,	Lawrence.
R. Carl Israel, jr.,	Wichita.
Reginald P. Jackman,	Wichita.
Alex Johnston,	Okmulgee, Okla.
Ben Sam Jones,	Lyons.
Levi Lilburn Kabler,	Kingman.
Melvin Joseph Kates,	Newton.

BACHELOR OF LAWS—concluded.

Roscoe Leonard King,	Marion.
Isaac E. Lambert, jr.,	Emporia.
Merle Vandever Martin,	Hutchinson.
Donald C. Martindell,	Lawrence.
Willis J. Masemore,	Sterling.
Elmer Herbert Mattingly,	Sedan.
Geoffrey William Miller,	St. Marys.
J. Earll Miller,	Lawrence.
Dayton R. Mounts,	Lawrence.
Donald Muir,	Harper.
Richard Edgar McIntosh,	Burns.
Raymond Clifton Ogden,	Lawrence.
Robert Rohring Owens,	Horton.
Benjamin V. Pardee,	Baldwin.
Glenn W. Porter,	Wichita.
Terrence D. Relihan,	Smith Center.
Leland M. Resler,	Chanute.
Walter Scott Rice,	Smith Center.
Burton Peabody Sears,	Lawrence.
Karl Victor Shawver,	Osawatomie.
Clinton A. Shiffer,	Girard.
Byron Lee Shinn,	Chanute.
Ira Clarence Snyder,	Stockton.
Guy A. Spencer,	Oakley.
Frank Swancara,	Irving.
Cleve Lidstone Swenson,	Junction City.
Frank Albert Theis,	Kansas City, Mo.
Clark A. Wallace,	Kingman.
Orville Henry Warner,	Garden City.
William Earl Wellhouse,	Topeka.
France Q. Wilson,	Abilene.
Charles Putnam Woodbury,	Kansas City, Mo.
Harold Hicks Woodbury,	Kansas City, Mo.

BACHELOR OF SCIENCE IN PHARMACY.

Arthur Earl Stevenson,	Lawrence.
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PHARMACEUTICAL CHEMIST.

Mary Ethel Attwood,	Clay Center.
Charles Adam Benkelman,	St. Francis.
Harold I. Bradley,	Caney.
Luther T. Britt,	Randlett, Okla.
Leon Kuebler,	Gridley.
Lillie Merle Mattson,	Elsmore.
Nick J. May,	Andale.
LeRoy Metz,	Sabetha.
Audray Lavery Purcell,	Leavenworth.
Karl Louis Roese,	McCune.
William W. Rohrer,	Edgerton.
Frank E. Rowland,*	Mulvane.
Ernest Rolland Smith,	Hartford.
Milford Norman Wedel,	Moundridge.

DOCTOR OF MEDICINE.

Frank E. Barrett,	Kansas City.
Martin Luther Brakebill,	Baxter Springs.
J. Wesley DeMand,	Wichita.
Milton Henry DeMand,	Wichita.
Charles Clayton Dennie,	Hillsdale.
Guy Alpin Finney,	Wamego.
William Thomas Fitzsimons,	Kansas City, Mo.
Frank L. Frack,	Longton.
Edward Thomas Gibson,	Rosedale.

DOCTOR OF MEDICINE—concluded.

Clyde Magill,	Andover.
Fred Henry Morley,	Kansas City.
Virgil Warren McCarty,	<i>Kansas City, Mo.</i>
Patrick Henry Owens,	Chanute.
Clarence L. Zugg,	Kansas City.

CERTIFICATE FOR GRADUATE NURSE.

Kate Alfrey,	McAllaster.
Norma Blunt,	Greeley.
Beda Kjellander,	<i>Kansas City, Mo.</i>
Nelle R. Roberts,	Horton.
Mabel Alice Taylor,	Sedgwick.

BACHELOR OF SCIENCE IN EDUCATION.

Bruce Merwin,*	Lawrence.
Lena C. Terrill,*	Lawrence.
Pauline H. Saunders,*	Lawrence.
Harvey C. Lehman,	Humboldt.
Florence E. Morse,	Lawrence.
George S. Snoddy,	Emporia.
Floyd B. Streeter,	Lawrence.

UNIVERSITY TEACHER'S DIPLOMA.

Brownie Angle,	Kansas City.
Ellinor F. Boyd,	Independence.
Ethel Louise Brown,	Burlington.
Leona Camilla Calene,	Sylvan Grove.
Faye Carmichael,	Lawrence.
Madge Carmichael,	Lawrence.
Bertha Louise Dack,	Lyons.
Eula Doty,	Larned.
Ethel Douglas,	Crestline.
Mary Eleanor Draper,	Oswego.
Gladys Elizabeth Elliott,	Lawrence.
Myrtle May Ferguson,	Lawrence.
Angeline Figley,	Lawrence.
Gertrude Figley,	Lawrence.
Nancy Marie Fisher,	Lyons.
Will French,	Pittsburg.
Admund J. Gibson,	McCune.
Tekla Cecilia Gustafson,	Lawrence.
Anna Hansine Hanson,	Lawrence.
John W. Harbeson,	Stafford.
Elizabeth Katherine Heavey,	Leavenworth.
Peter C. Hiebert,	Hillsboro.
Eva Pearl Hull,	Lawrence.
Myrtle Humphrey,	Russell.
Myrtle Ethel Hyre,	Lawrence.
Delpha Johnson,	Randolph.
Alfred Paul Krueger,	Atchison.
Evadne Laptad,	Lawrence.
Harvey C. Lehman,	Humboldt.
Anna Robbins Manley,	Junction City.
Mildred Maurine Manley,	Iola.
Nell Minnie Martindale,	Lawrence.
Rubey May Maynard,	<i>Kansas City, Mo.</i>
Orell Grace Meyers,	Olathe.
Lillian Ora Miller,	Lyndon.
Ruth C. Miller,	Pratt.
Inez Morris,	Tecumseh.
Florence Emera Morse,	Lawrence.
Winifred Morton,	Atchison.
Lloyd Henry Mosser,	Hamlin.

UNIVERSITY TEACHER'S DIPLOMA—concluded.

Beulah V. Murphy,	Lawrence.
Sarah Rhoda Naylor,	Holton.
Myrea Noyes,	Portsmouth, Va.
Earl Cleveland O'Roke,	Sabetha.
Rebecca Passon,	Lawrence.
Evalyn Ragsdale,	Smith Center.
Anna Dessa Rankin,	Lawrence.
Maude Rhodes,	Dodge City.
Jennie May Richardson,	Lawrence.
Myra Rogers,	Abilene.
Bernice M. Ruhlandt,	Osawatomie.
Mae Florence Rossman,	Olathe.
Elsie Louise Smith,	Leavenworth.
Edna Maude Smith,	Smith Center.
Jeanette Spalding,	Kansas City, Mo.
George Samuel Snoddy,	Emporia.
Ruth Spray,	Lawrence.
Effie Louise Steven,	Lawrence.
Helen K. Stevens,	Parsons.
Lois Stevens,	Lawrence.
Ethel Lucile Stone,	Emporia.
Lena Charles Terrill,	Lawrence.
Catherine Tupper,	Lawrence.
Florence Ada Wallace,	Phillipsburg.
Mayme Wheeler,	Guthrie, Okla.
Grace Wilkie,	Wichita.
Lucile Hortense Wilkinson,	Muskogee, Okla.
Elizabeth K. Wilson,	Kansas City, Mo.

Roll of Students.

Graduate School.

* Seniors, College or Engineering, who have completed sufficient work for the A. B. or B. S. degree and are doing graduate work.

Adair, Mary Emma, A. B. '96, Tarkio College, <i>Greek, Latin,</i>	Garnett.
Aldrich, Maelynette, A. B. '12, University of Kansas, <i>Latin, Greek,</i>	Salina.
Allison, Roy G.,* A. B. '13, University of Kansas, <i>History,</i>	Clay Center.
Andrews, Orrel Marie, A. B. '11, Fairmount College, <i>Biology,</i>	Wichita.
Bailey, Reginald King, A. B. '11, University of Kansas, <i>Chemistry,</i>	Lawrence.
Banks, Ida Grace, A. B. '12, Campbell College, <i>Sociology,</i>	Lawrence.
Beamer, Raymond,* A. B. '13, University of Kansas, <i>Zoology, Geology,</i>	Lawrence.
Beyer, Adolph H., A. B. '12, University of Kansas, <i>Entomology,</i>	Inman.
Bragg, Gilbert A., B. S. '13, University of Kansas, <i>Chemistry, Bacteriology,</i>	Lawrence.
Brock, Frank P., B. S. '07, University of Kansas, <i>Chemistry,</i>	Lawrence.
Brock, Ivy G., A. B. '07, University of Kansas, <i>History,</i>	Lawrence.
Brook, Elizabeth Cable, A. B. '12, University of Kansas, <i>History,</i>	Lawrence.
Brown, Carl Richards, A. B. '11, A. M. '12, University of Kansas, <i>Philosophy,</i>	Lawrence.
Brown, Wilson R., A. B. '12, Fairmount College, <i>Chemistry,</i>	Centralia.
Brownlee, Harold F.,* A. B. '13, University of Kansas, <i>Chemistry,</i>	Lawrence.
Burke, Martin, A. B. '12, Bethany College, <i>Economics, History,</i>	McPherson.
Campbell, Elizabeth, A. B. '12, Washburn College, <i>German,</i>	Topeka.
Carson, Earl,* B. S. '13, University of Kansas, <i>Mechanical Engineering,</i>	Peabody.
Carter, Frances, A. B. '09, University of Kansas, <i>German, English,</i>	Lawrence.
Claassen, P. W.,* A. B. '13, University of Kansas, <i>Biology, Chemistry,</i>	McPherson.
Coxedge, Lina,* A. B. '13, University of Kansas, <i>German, Sociology,</i>	Parsons.
Crawford, Nelson A., A. B. '10, University of Iowa, <i>English,</i>	Topeka.
Clarke, Florence Greeley, A. B. '97, University of Kansas, <i>Education, Home Economics,</i>	Lawrence.
Clymer, Rolla A., A. B. '09, College of Emporia, <i>Sociology, English,</i>	Emporia.

Cotter, Georgia Jane, A. B. '12, University of Kansas, <i>French, English,</i>	Kansas City, Mo.
Crookham, Arthur L., A. B. '12, Southwestern College, <i>Political Science, Economics,</i>	Winfield.
Crow, Hallie Ernest, A. B. '09, Friends University, A. M. '12, University of Kansas, <i>Zoölogy,</i>	Wichita.
Crum, Errett R.,* A. B. '13, University of Kansas, <i>Physical Science,</i>	Munden.
Curl, Howard E., A. B. '11, University of Kansas, <i>Physiology,</i>	Osborne.
Dale, La Vergne,* A. B. '13, University of Kansas, <i>Modern Language, History,</i>	Lawrence.
Danskin, Floyd Brown, A. B. '12, University of Kan- sas, <i>History, Economics,</i>	Aulne.
Derby, Jesse Raymond, A. B. '11, Southwestern Col- lege, A. M. '12, University of Kansas, <i>English,</i>	Winfield.
Dotterer, John Ezra, A. B. '12, Blue Ridge College, <i>Mathematics, Astronomy,</i>	Parkville, Mo.
Eaton, Ella Jane, A. B. '12, Highland College, <i>Mathe- matics,</i>	Highland.
Emery, Walter Titus, A. B. '11, University of Kansas, <i>Entomology,</i>	Wetmore.
Fagan, William Brock, A. B. '10, Earlham College, <i>English,</i>	Parkville, Mo.
Fletcher, John, B. S. '99, University of Kansas, <i>Civil Engineering,</i>	Seattle, Wash.
Flynn, Ruby Vee,* A. B. '13, University of Kansas, <i>Mathematics, Sociology,</i>	Chanute.
Garver, John Diller, B. S. '10, University of Kansas, <i>Mechanical Engineering,</i>	Lawrence.
Gowans, Harry Wilson, B. S. '08, University of Kan- sas, <i>Education, History,</i>	Lawrence.
Graham, Agnes Emma, A. B. '05, A. M. '07, Univer- sity of Kansas, <i>History,</i>	Ottawa.
Grant, Mary A.,* A. B. '13, University of Kansas, <i>Latin,</i>	Topeka.
Griffin, Edward Lawrence, A. B. '11, University of Kansas, <i>Chemistry,</i>	Lawrence.
Griffiths, Glendale, A. B. '12, University of Kansas, <i>Zoölogy,</i>	Lawrence.
Hackl, Marie Antoinette, A. B. '12, University of Ten- nessee, <i>History, English,</i>	Nashville, Tenn.
Hall-Quest, Alfred Lawrence, A. B. Augustana Col- lege, A. M. Princeton, <i>Education,</i>	Parkville, Mo.
Hanson, Carl Falster, B. S. '12, University of Kansas, <i>Electrical Engineering,</i>	Geuda Springs.
Harris, Walter Leslie, A. B. '12, Marionville-Park, <i>Education, Philosophy,</i>	Baxter Springs.
Herrick, Mariam Ellen, A. B. '11, Winona College, <i>English,</i>	Warsaw, Ind.
Hodgson, Elizabeth, A. B. '06, Fairmount College, <i>English, Sociology, Economics,</i>	Wichita.
Hoffman, Robert Lee, A. B. '12, University of Kansas, <i>Anatomy,</i>	Ellsworth.
Hogrefe, Pearl, A. B. '10, Southwestern College, <i>Edu- cation, Sociology, History,</i>	Wichita.
Hopper, Earl Brady, A. B. '12, Baker University, <i>Economics,</i>	Ness City.
Horner, Alfreda Lindley, A. B. '12, Friends Univer- sity, <i>Latin,</i>	Wichita.
Horton, Harvey Amos, A. B. '03, A. M. '04, McPher- son College, <i>Entomology,</i>	McPherson.
Hosford, Ruby Cornelia, A. B. '09, University of Kan- sas, <i>Entomology,</i>	Lawrence.
Howell, Richard Vinton, A. B. '12, College of Em- poria, <i>Economics, Sociology,</i>	Emporia.
Hoyt, Homer,* A. B. '13, University of Kansas,	Kansas City.

Humphrey, Irvin Wesley, A. B. '10, University of Kansas, <i>Chemistry</i> ,	Russell.
Hungerford, Herbert B., A. B. '11, University of Kansas, <i>Entomology</i> ,	Lawrence.
Hunt, Claude Judson, A. B. '10, Bethel College, <i>Medicine</i> ,	Oswego.
Hutton, Arthur J., A. B. '12, Southwestern College, <i>History, Economics</i> ,	Winfield.
Hyre, Edna Marie, A. B. '10, University of Kansas, <i>Biology, Chemistry, Home Economics</i> ,	Lawrence.
Isely, Dwight, A. B. '10, Fairmount College, <i>Entomology</i> ,	Wichita.
Kauffman, LeRoy Levelon, A. B. '09, Cooper College, <i>Sociology</i> ,	Hutchinson.
Lehman, Harvey C., A. B. '12, University of Kansas, <i>German, French, English</i> ,	Humboldt.
Lichtenwalter, Homer O., A. B. '11, McPherson College, <i>Chemistry</i> ,	McPherson.
Lindsey, Lydia Almira, A. B. '07, University of Kansas, <i>English</i> ,	Cherryvale.
Longabaugh, Cecil M.,* A. B. '13, University of Kansas, <i>English</i> ,	Lawrence.
Maage, Fred C., B. S. '12, Midland College, <i>Economics, Political Science</i> ,	Atchison.
Malleis, Otto, A. B. '12, University of Kansas, <i>Chemistry</i> ,	Halstead.
Mallory, Arthur Ernest, A. B. '12, University of Kansas, <i>Biology</i> ,	Scott City.
Medes, Grace, A. B. '04, University of Kansas, <i>Zoology, Botany</i> ,	Kansas City, Mo.
Miller, Lena Vivian, A. B. '05, University of Kansas, <i>Home Economics</i> ,	Lawrence.
Moser, Minnie T.,* A. B. '13, University of Kansas, <i>German</i> ,	Blue Rapids.
Moys, Fay Cecilia, A. B. '12, University of Kansas, <i>History</i> ,	Lawrence.
Myers, John Tennyson, A. B. '11, Washburn, M. S. '12, University of Kansas, <i>Chemistry</i> ,	Esckridge.
MacGregor, Hazel Hope, A. B. '06, Yankton, A. M. '09, University of Illinois, <i>Mathematics</i> ,	Lawrence.
McCulloch, Irene,* A. B. '13, University of Kansas, <i>Biology</i> ,	Lawrence.
McRuer, William Gladstone, A. B. '12, Park College,	Parkville, Mo.
Nelson, Alfred Lewis, A. B. '11, Midland College, <i>Mathematics</i> ,	Troy.
Nichols, Fred Augustus, B. S. '02, University of Kansas, <i>Electrical Engineering</i> ,	Buffalo, N. Y.
Olinger, Stanton, A. B., McCormick Seminary, Princeton, <i>Sociology</i> ,	Lawrence.
Parks, Alexander Baird, A. B. '06, Missouri Valley College, <i>Education</i> ,	Lawrence.
Passon, Rebecca, A. B. '12, University of Kansas, <i>German</i> ,	Lawrence.
Patchejieff, Boris, B. S., A. B. '10, University of Kansas, <i>Mining Engineering</i> ,	Sophia, Bulgaria.
Pendleton, Claudia Clara, A. B. '08, University of Kansas, <i>English</i> ,	Lawrence.
Reed, Maud Josie, B. S. '12, Washburn College, <i>Botany</i> ,	Topeka.
Reno, William Wilkinson, A. B. '93, University of Kansas, <i>Sociology</i> ,	Lawrence.
Rhodes, Edmund Oliver, B. S. '12, University of Kansas, <i>Chemistry, Geology, Sociology</i> ,	Dodge City.
Roberts, Robert Chester, B. S. '12, Ottawa University, <i>Chemistry</i> ,	Onaga.
Rodebush, Worth Huff, A. B. '12, University of Kansas, <i>Chemistry</i> ,	Lawrence.

Koot, Charles Burton, A. B. '12, University of Kansas, <i>Physiology</i> ,	Lawrence.
Rose, Reed Phillips, B. S. '12, Ohio University, <i>Chemistry</i> ,	Athens, Ohio.
Roth, Oliver Nova, A. B. '04, Transylvania University, <i>Sociology, Psychology</i> ,	Ness City.
Rudolph, John Conrad, A. B. '84, Berlin, <i>Sociology, Psychology, Philosophy</i> ,	Lawrence.
Sankee, Patti, A. B. '12, University of Kansas, <i>Latin</i> ,	Lawrence.
Sample, Sarah E., A. B. '93, Ottawa University,	New Castle, Colo.
Schmitt, Edwin C., A. B. '12, University of Kansas, <i>Biology</i> ,	Moundridge.
Schroeder, Jacob P., A. B. '12, McPherson College, <i>Physics, Chemistry</i> ,	Hillsboro.
Sherwood, Noble P., B. S. '05, A. M. '11, University of Kansas, <i>Medicine</i> ,	Lawrence.
Smith, Frederick M., B. S. '08, A. M. '11, University of Kansas, <i>Sociology</i> ,	Independence, Mo.
Smith, Maude Ethel, A. B. '04, Cooper College, <i>History</i> ,	Sterling.
Smith, Otto Orville, A. B. '07, Southwestern College, <i>History, Political Science</i> ,	Latham.
Snoddy, George Samuel, A. B. '12, University of Kansas, <i>Education, Sociology</i> ,	Emporia.
Stewart, Maude B., A. B. '09, Baker University, <i>History, Economics</i> ,	Baldwin.
Swick, Lena, B. S. '10, Midland College, <i>English</i> ,	Abilene.
Taylor, Claude Carson, A. B. '09, Oklahoma Christina University, <i>Philosophy, Sociology</i> ,	Enid, Okla.
Thompson, Henry Walter, A. B. '12, McPherson College, <i>Sociology, Economics</i> ,	McPherson.
Weith, Archie James, B. S. '08, University of Kansas, <i>Chemistry</i> ,	La Harpe.
Wheeler, John Jefferson, A. B. '04, Indiana University, <i>Mathematics</i> ,	Lawrence.
Wilson, Kathryn Marie, A. B. '09, University of Kansas, <i>English, Education</i> ,	Lawrence.
Wilson, Matthew H., B. S. '04, Bellevue College, <i>Education</i> ,	Parkville, Mo.
Wilson, Orville Turner, A. B., College of Emporia, A. M. '12, University of Kansas, <i>Botany</i> ,	Emporia.
Withington, Charles Hall, B. S. '06, M. S. '08, Kansas Agricultural College, <i>Entomology</i> ,	Lawrence.
Withington, Georgia Edna, B. S. '12, Kansas State Agricultural College, <i>History, Education</i> ,	Lawrence.
Wood, Frank Edwin, A. B. '12, Baker University, <i>Mathematics, Physics</i> ,	Wamego.
Woolsey, Carrie I.,* A. B. '13, University of Kansas, <i>Biology</i> ,	Lawrence.
Wright, Clinton, A. B. '10, McPherson College, <i>Mathematics, History</i> ,	McPherson.
Young, Clifford Caudy, A. B. '10, M. S. '11, University of Kansas, <i>Chemistry</i> ,	Lawrence.

GRADUATES, 120

Graduate Students, Summer Session, 1912.

Armstrong, Nan R., A. B. '12, University of Kansas, <i>Zoölogy</i> ,	Lawrence.
Bailey, Reginald K., A. B. '11, University of Kansas, <i>Chemistry, Physics</i> ,	Lawrence.
Baker, Lily G., A. B. '12, University of Kansas, <i>Education, History</i> ,	Cherryvale.
Barnes, Luther, B. S. '08, University of Kansas, <i>Physics</i> ,	Lawrence.
Barry, Bernice L., A. B. '09, University of Kansas, <i>History</i> ,	Sterling.

Baumgartner, Rachel A., A. B. '12, University of Kansas, <i>Zoölogy</i> ,	Halstead.
Bedell, Florence J., A. B. '11, University of Kansas, <i>Botany</i> ,	Dodge City.
Bennett, Mary J., A. B. '06, University of Kansas, <i>Latin, English</i> ,	Tulsa, Okla.
Brown, Lulu M., A. B. '07, Ottawa University, <i>Latin</i> ,	Ottawa.
Coe, J. E., A. B. '05, Emporia College, <i>Physics, Botany, Chemistry</i> ,	Dodge City.
Conwell, H. H., B. S. '07,	—
Cook, Mary A., Ph. B. '07, Baker University, <i>German</i> ,	Oswego.
Crawley, Oma, A. B. '11, Cooper College, <i>Education, History</i> ,	Dighton.
Curtiss, Bessie, A. B. '12, University of Kansas, <i>Education</i> ,	Lawrence.
Davis, Philip L., A. B. '12, University of Kansas, <i>Physiology</i> ,	Lawrence.
Dershem, Elsie,	—
Devlin, John A., B. S. '02, University of Kansas, <i>Education</i> ,	Fort Scott.
Devlin, Mary, A. B. '01, University of Kansas, <i>Sociology</i> ,	Fort Scott.
Dillard, Mary, A. B. '96, University of Kansas, <i>English, Education</i> ,	Lawrence.
Dreier, Albert A., B. S. '08, Midland College, <i>Education</i> ,	Morrill.
Estey, Helen S., A. B. '11, Washburn College, <i>English, Latin</i> ,	Topeka.
Faulkner, James T., A. B. '11, A. M. '12, University of Kansas, <i>Physiology, Sociology, German</i> ,	Lansing.
Fisher, Osa O., A. B. '12, Eastern College, <i>English</i> ,	La Crosse.
Gaily, Elma, <i>English</i> ,	Sterling.
Gibson, Admund J., A. B. '11, University of Kansas, <i>History, English</i> ,	McCune.
Gilchrist, Irene A., A. B. '05, University of Kansas, <i>Latin, French</i> ,	Kansas City, Mo.
Hanger, James H., A. M. '11, University of Kansas, <i>Education</i> ,	Meriden.
Harbeson, John W., A. B. '11, University of Kansas, <i>Economics</i> ,	Perry.
Heck, Oscar B., A. B. '12, Oklahoma Christian University, <i>Education, Geology</i> ,	Harper.
Hodgson, Ruth, A. B. '11, University of Kansas, <i>English, German</i> ,	Lawrence.
Horner, Robert M., A. B. '80, Monmouth College, <i>Chemistry, Physics</i> ,	Sterling.
Hron, Ralph P., B. S. '11, Epworth University, <i>Chemistry</i> ,	Guthrie, Okla.
Hull, Blanche E., A. B. '10, University of Kansas, <i>English</i> ,	Lawrence.
Ise, Mary, A. B. '12, University of Kansas, <i>Latin, English</i> ,	Lawrence.
Jackson, Ruby, A. B. '07, University of Kansas, <i>History, Journalism</i> ,	Lawrence.
Jennings, H. R., A. B. '09, Emporia College, <i>Entomology</i> ,	McPherson.
Kent, Mabel, A. B. '10, University of Kansas, <i>Latin</i> ,	Lawrence.
Kezer, Charles D., B. S. '01, Oklahoma College, <i>Economics, Education</i> ,	Stillwater, Okla.
Killarney, Margaret, A. B. '12, University of Kansas, <i>History</i> ,	Atchison.
Logan, Wm. T., A. B. '04, Cumberland University, <i>Sociology</i> ,	Knob Noster, Mo.
Loomis, Arthur K., A. B. '09, Baker University, <i>English</i> ,	Oswego.
Lovejoy, Beryl, A. B. '11, University of Kansas, <i>Botany, Entomology</i> ,	Lawrence.
Mennie, Bruce W.,	—

Merryman, Mabel, B. S. '11, Baker University, <i>Latin</i> ,	Hamilton, Mo.
Metcalf, Helen G., A. B. '07, University of Kansas,	
<i>History</i> ,	Lawrence.
McClelland, Laura R., A. B. '09, University of Kan-	
sas, <i>English</i> ,	Holton.
McKittrick, Bess J., A. B. '12, University of Kansas,	
<i>Sociology</i> ,	Lawrence.
McNaughton, Alicia B., A. B. '09, University of Kan-	
sas, <i>English, German</i> ,	Tonganoxie.
Olson, Henry N., A. B. '01, Bethany College, <i>Mathe-</i>	
<i>matics</i> ,	Lindsborg.
O'Roke, Earl C., A. B. '12, University of Kansas,	
<i>Entomology</i> ,	Shabetha.
Phillips, John F., A. B., Southwestern College, <i>Mathe-</i>	
<i>matics</i> ,	Winfield.
Ragsdale, Evelyn, A. B. '12, University of Kansas,	
<i>History, Sociology, English</i> ,	Lawrence.
Rankin, Roy, A. B. '12, University of Kansas, <i>Chem-</i>	
<i>istry</i> ,	Lawrence.
Reed, J. C., B. S. '10, University of Kansas, <i>Botany</i> ,	Lawrence.
Regier, C. C., A. B. '12, University of Kansas, <i>Eco-</i>	
<i>nomics</i> ,	Moundridge.
Roberts, J. W., A. B. '03, Baker University, <i>English</i> ,	Peabody.
Robinson, James G., A. B. '11, Cooper College, <i>Chem-</i>	
<i>istry</i> ,	Viola.
Smith, Frank H., B. S. '05, University of Kansas,	
<i>Sociology, English</i> ,	Lawrence.
Stanton, Guy K., B. S. '06, Hiram College, <i>Zoölogy</i> ,	
<i>Entomology</i> ,	Enid, Okla.
Steeper, Hubert T., A. B. '09, University of Kansas,	
<i>History</i> ,	Lawrence.
Stevenson, Arthur E., B. S. '12, University of Kansas,	
<i>Physics</i> ,	Lawrence.
Thompson, Earl L., A. B. '08, Kansas State Normal,	
<i>Mathematics</i> ,	Lawrence.
Tnompson, Martha A., A. B., University of Kansas,	
<i>Latin</i> ,	Lawrence.
Thompson, William R., A. B. '11, Baker University,	
<i>Economics</i> ,	Baldwin.
Titus, R. W., A. B. '10, Cornell, <i>Education, Physics</i> ,	Dodge City.
Twente, John W., A. B. '10, Central Wesleyan, <i>Educa-</i>	
<i>tion</i> ,	Baxter Springs.
VanVickle, Anna, A. B. '07, Baker University, <i>Eng-</i>	
<i>lish</i> ,	Lawrence.
Wenrich, Frances C., A. B. '11, University of Kansas,	
<i>Education, English</i> ,	Lawrence.
Wilson, Matthew H., B. S. '04, Bellevue College, <i>Psy-</i>	
<i>chology, Education</i> ,	Parkville, Mo.
Wolcott, Ethel G., A. B. '07, University of Kansas,	
<i>Botany</i> ,	Lawrence.
Woodbury, Blanche, A. B. '07, University of Kansas,	
<i>English</i> ,	Lawrence.
Woodruff, Regina, A. B. '12, University of Kansas,	
<i>Biology</i> ,	Lawrence.
Wyeth, Addy, A. B. '05, Park College, <i>English</i> ,	Lawrence.
Young, B. P., B. S. '10, University of Kansas, <i>Mathe-</i>	
<i>matics, Sociology</i> ,	Halstead.

GRADUATES, IN SUMMER SESSION, 74

TOTAL GRADUATES, 194

The College.

SENIORS.

Allison, Ray Gilbert,	Clay Center.
Anderson, Lionel Andrius,	Lawrence.
Anderson, Mabel May,	Gas.
Andrews, Mary E.,	Powhattan.
Athay, Roland Milton,	Kiowa.
Atkinson, Vera,	Lawrence.
Babb, George Leroy,	Lawrence.
Babb, George Reuben,	Lawrence.
Banker, Frances Almona,	Russell.
Bates, Laura Fidelia,	Garden City.
Beamer, Raymond,	Lawrence.
Bechtold, Anna Dorothea,	Lawrence.
Beyer, Melinda Lynn,	Inman.
Black, Florence Lucile,	Lawrence.
Black, Floyd Davidson,	Severy.
Black, Frances Inez,	Lawrence.
Bossi, John Trentini,	Arkansas City.
Bowler, Joseph Lyndel,	Kansas City.
Bozell, Bessie Marie,	Beloit.
Brown, Helen Eacker,	Delphos.
Brown, Lois Rose,	Troy.
Brownlee, Harold Joseph,	Sterling.
Broyles, Glen Hunt,	Bethany.
Brunner, Ellen Mildred,	Onaga.
Buchanan, Nellie Reece,	Lawrence.
Bunn, Zippa Lorraine,	Lawrence.
Burkholder, William Miesse,	Marion.
Burnett, Helen,	Hymer.
Burrough, Phyllis Marguerite,	Lawrence.
Butler, Walter Albert,	Bird City.
Butts, Hazel Ida,	Wichita.
Buxton, Lewis Augustine,	Kansas City, Mo.
Buzick, William Alonson,	Sylvan Grove.
Calene, Glenn Clifton,	Sylvan Grove.
Campbell, John Ross,	Meade.
Capps, Murl T.,	Larned.
Carson, Frank L.,	Ashland.
Claassen, Peter Walter,	Hillsboro.
Clark, Edna M.,	Smith Center.
Clark, Gladys Ruth,	Fredonia.
Clark, Hazel Blanche,	Kansas City, Mo.
Clyde, Nathana Lore,	Kansas City.
Conrad, Agnes,	Kansas City, Mo.
Cook, Fern Alice,	Wellington.
Cox, Elizabeth,	Wellsville.
Coxedge, Lina,	Parsons.
Cressman, Ada Beatrice,	Lawrence.
Croan, Melvin,	Kincaid.
Crum, Errett Ross,	Munden.
Dague, John Frank,	Clifton.
Dalbey, Nora Elizabeth,	Geneseo.
Dale, LaVergne,	Lawrence.
Dalton, Beatrice L.,	Lawrence.
Darland, Mary Edna,	Lawrence.
Daum, Bessie,	Lawrence.
Daum, Kate,	Lawrence.
Davidson, Helen Irene,	Lawrence.
Davis, Silas Irving,	Lawrence.
Degen, Helen,	Kansas City, Mo.
Dolbee, Myrtle Elizabeth,	Lawrence.

SENIORS—*continued.*

Dunaway, Elizabeth,	Oswego.
Dunbar, Carl Owen,	Hallowell.
Dunlevy, Mabel Mary,	Kansas City.
Dupree, Louise M.,	Topeka.
Eaton, Lola Earle,	Lawrence.
Edwards, Wayne,	Chapman.
Eisele, Henry Gottlieb,	Eudora.
Estep, Alma Ruth,	Kansas City, Mo.
Evans, Esther Preston,	Lawrence.
Fessenden, Ersel Meal,	Emporia.
Fleeson, Elizabeth Helen,	Sterling.
Flinn, Ruby Vee,	Chanute.
Forbes, Annie,	Wathena.
Fretz, Daisy,	Pratt.
Goldman, Irma,	Wichita.
Gorsuch, Cecil Otis,	Sharon Springs.
Grant, Mary Amelia,	Topeka.
Green, Bessie Burena,	Coffeyville.
Greenlees, Nellie Louise,	Lawrence.
Greer, Mary Estellene,	Kansas City, Mo.
Hadley, Helena,	Glen Elder.
Harger, Lois,	Abilene.
Harper, Iva Belle,	Lawrence.
Hazzard, Lawrence Rosseau,	Wichita.
Hite, Howard Omar,	Holton.
Hite, Ora Floy,	Merriam.
Hobson, Asher John,	Lawrence.
Hodder, Fredericka,	Lawrence.
Hoopes, Helen Rhoda,	Lawrence.
Hopkins, Annie P.,	Ellsworth.
Hornbaker, Clyde O.,	Castleton.
Houghton, James Henry,	Lawrence.
Housholder, Vale Imogen,	Columbus.
Hoyt, Homer,	Argentine.
Huff, Lucy Helen,	Chapman.
Hull, Lois Fern,	Nickerson.
Jacobs, John Frederick,	Athol.
Jensen, Howard Eikenberry,	Herington.
Johnson, Flaude Eddy,	Lawrence.
Jones, Ernest Clare,	Drexel, Mo.
Jones, Ethel Anna,	Chanute.
Kennedy, Elizabeth Margaret,	Lawrence.
Ketchum, Harold J.,	Lawrence.
Ketchum, Pauline,	Lawrence.
Kimel, Chester LeRoy,	Clearwater.
Knoblauch, Vera,	Wichita.
Krehbiel, Carl Clifford,	Moundridge.
Laming, Edith,	Tonganoxie.
Lawrence, James Frank,	Lawrence.
Leisy, Ernest Erwin,	Moundridge.
LeMoine, Albert Napoleon,	Concordia.
Lightner, Jean,	Bucklin.
Liston, Odus,	Altamont.
Lobsitz, Blanch,	Perry, Okla.
Long, Nina Jane,	Madison.
Longabaugh, Cecil Mae,	Lawrence.
Lovejoy, Edith Emeline,	Lawrence.
Lupton, Claribel Lytle,	Lawrence.
Malott, Anne Caroline,	Abilene.
Marak, Mary Magdalen,	Halstead.
Mavity, Della,	Lyndon.
Miller, Alfa,	Lawrence.
Miller, Harry Edward,	Eudora.
Minor, Milton Carlisle,	Douglass.
Mitchell, Young Oscar,	Tulsa, Okla.

SENIORS—*continued.*

Moody, Floyd Emert,	Fort Scott.
Morrow, Lena Marie,	Lawrence.
Morton, Paul Hubbard,	Highland.
Moser, Minnie Teresa,	Blue Rapids.
Moses, Genevieve Kathleen,	Carthage, Mo.
Myers, Dessie Theo,	Lawrence.
McArthur, John Cecil,	Walton.
McCammon, Leah Constance,	Lawrence.
McCormick, Clarence,	Arkansas City.
McCreath, Catherine Elizabeth,	Lawrence.
McCreath, Frances Christina,	Lawrence.
McCulloch, Irene Agnes,	Frankfort.
McCune, Carrie Loleta,	Leavenworth.
McKinley, Walter Jay,	Columbus.
McLellan, Marguerite Helen,	Lawrence.
McMillan, Harrison,	Arkansas City.
McNeal, Oattie,	Norcatuar.
Neumuller, Beatrice,	Kansas City, Mo.
Nowlin, Mabel Ruth,	Kansas City, Mo.
Oakley, Edna Bascolm,	Kansas City, Mo.
Painter, William Clymer,	Peculiar, Mo.
Patterson, Oliver Wellington,	Lawrence.
Payne, Florence Mary,	Lawrence.
Pendleton, Emma Helen,	Lawrence.
Pepper, Adelia Morris,	Lawrence.
Potter, Earl,	Salina.
Pratt, Ina Marian,	Lawrence.
Ransom, Helen Maud,	Lawrence.
Reding, Mary Gertrude,	Lawrence.
Reed, Mildred Barnhart,	Lawrence.
Rhine, Orin Milton,	Washington.
Rose, Helen,	Rosedale.
Savage, Ana Elizabeth,	Lawrence.
Schaeffer, Paul Bigelow,	Lawrence.
Scheurer, Fred Logan,	Lawrence.
Scheurer, Jacob David,	Lawrence.
Schloss, Hazel Estelle,	Atchison.
Sellers, Robert Lawrence,	Paola.
Share, James Temple,	Fort Scott.
Sharp, Elwood Armstrong,	Council Grove.
Sieder, Hulda Sophia,	Enterprise.
Siever, Carl Henry,	Wichita.
Smith, Gordon,	Lawrence.
Smith, Ina Elizabeth,	Lawrence.
Smith, Inez Frances,	Lawrence.
Smith, Lester Alvin,	Portis.
Smyth, Jessie Miriam,	Eureka.
Soper, Ray Jordan,	Hutchinson.
Spreier, Frederick Franklin,	Pawnee Rock.
Starns, Olive,	Basehor.
Staton, George Walter,	Lawrence.
Stearns, Fred Guy,	Duquoin.
Stewart, Theodosia,	Hazelton.
Steinsmeyer, Charles George,	Leavenworth.
Stubbs, Ansel Hartley,	Kansas City.
Swick, Emily Leora,	Abilene.
Syfert, Alva Clyde,	Ashton.
Tandy, Martha Lucile,	Winfield.
Taylor, Grace Joy,	Lyons.
Thomas, Mary Eleanor,	Emporia.
Thompson, Arthur Harlan,	Kansas City, Mo.
Thompson, Stella McDowell,	Parkville, Mo.
Turner, Herschel Roy,	Lawrence.
Twyman, George Thomas,	Independence, Mo.
Van Doren, Ruth,	Kansas City, Mo.
Walker, Guy R.,	Hutchinson.

SENIORS—concluded.

Ward, Roscoe,	Belleville.
Weldon, Virginia Aletha,	Lawrence.
Wellhouse, Walter Housley,	Topeka.
Whitney, Elmer Lemuel,	Talmage.
Wilber, Allen Sage,	Lawrence.
Wiley, Geneva Pauline,	Emporia.
Williams, John Alexander,	Buffalo, N. Y.
Wood, Rachel Adah,	Concordia.
Woodruff, Elizabeth Opal,	Kingman.
Woolsey, Carrie I.,	Lawrence.
Yates, Lucile L.,	Junction City.
Yeoman, Don Orel,	Kingman.
Zimmerman, Reba Mary,	Lawrence.

SENIORS, 204

JUNIORS.

Abels, Edwin Fred,	Eudora.
Addison, Beula Dundee,	Kansas City, Mo.
Allphin, Helen Louise,	Lawrence.
Anderson, Bessie May,	Lawrence.
Arnett, Ila Maud,	Lawrence.
Ayers, Rose Emily,	Parsons.
Badger, Chester Anson,	Overbrook.
Bailey, Bonnie Deane,	Lawrence.
Baker, Edward Sherman, Jr.,	Kansas City.
Barger, Lucy Agnes,	Topeka.
Barnard, Florence M.,	Osawatomie.
Beardsley, Cecil Miles,	Russell.
Bechtel, Eva,	Hiawatha.
Beckett, Bessie Belle,	Macksville.
Bennet, Emmet Leslie,	Plains.
Berger, Emily V.,	Halstead.
Bigelow, Edna Nadine,	Gardner.
Black, Donald Ray,	Columbus.
Blakey, Letitia,	Pleasanton.
Boddington, Edward Mozley,	Kansas City.
Bossi, Mary Pauline,	Arkansas City.
Bowers, David W.,	Centropolis.
Boynton, Roland Elmer,	Lawrence.
Braden, Clyde Owen,	Sabetha.
Branine, Harold R.,	Hutchinson.
Brown, William Fayette,	Lawrence.
Buchanan, Elma Ruth,	Lawrence.
Burchfiel, Cecil M.,	Stafford.
Bush, Dean Thomas,	Kansas City, Mo.
Butts, Berenice Aileen,	Wichita.
Cady, Fanny Alberta,	Lawrence.
Callen, Speer Woodson,	Junction City.
Carraher, Nelle,	Kansas City, Mo.
Castle, Clarence Austin,	St. Joseph, Mo.
Castles, John Edgar,	Fort Morgan, Colo.
Caton, Candace Orene,	Concordia.
Chalfont, Arthur Raymond,	Garden City.
Clark, Elmer Clinton, Jr.,	Oswego.
Cook, Hale Scoville,	Kansas City, Mo.
Cox, Pearl Mary,	Wichita.
Crawford, Annabelle,	Lawrence.
Crawford, R. Harold,	Lawrence.
Crowley, Esther May,	Lawrence.
Cummings, Luella,	Beatrice, Neb.
Curran, Idress,	Lawrence.
Dahlene, Eduard,	Lawrence.
Dail, Oran Columbus,	Lawrence.
Dale, Kirke Woodford,	Cedar Vale.

JUNIORS—*continued.*

Dart, Raymond Osborne,	Kansas City.
Davidson, Throck Martin,	Wichita.
Davis, Eugene Frank,	Kansas City.
Davis, Leo Lloyd,	Colby.
Davis, Robert Crenshaw,	Kansas City.
Dingee, Minnie Elizabeth,	Minneapolis.
Dinsmore, Robert Scott, Jr.,	Troy.
Dixon, Harry William,	Kansas City.
Dixon, Otto,	Mound Valley.
Drake, Esther Louise,	Lawrence.
Drake, Paul McCheyne,	Lawrence.
Dunbar, Lucy Maud,	Hallowell.
Dunn, Violet Wanda,	Concordia.
Duston, Arthur W.,	Washington.
Dyer, Rose Josephine,	Baldwin.
Eldridge, Ray Lemuel,	Ellsworth.
Elliott, James Ryan,	Linn.
Elliott, Russell Dunmire,	Lawrence.
Ewald, Mark Scheffer,	Lawrence.
Fairweather, Maurine Imogene,	Kansas City, Mo.
Fisk, Harry Clay,	Lawrence.
Flint, Herbert,	Girard.
Frank, Arvid L.,	Kansas City, Mo.
Freiburghouse, Elizabeth M.,	Hiawatha.
Fuqua, Florence Frances,	Kansas City.
Gardner, Richard Harland,	Altونا.
Gemberling, Grace Elizabeth,	Lancaster.
Gibson, Charles Earl,	Wellsville.
Givin, Grace Eleanor,	Emporia.
Golden, Lela,	Fort Scott.
Goldman, Abe Milton,	Kansas City, Mo.
Graber, Otto Christy,	Moundridge.
Granger, Marshall Allen,	Lawrence.
Greene, Hazel Katherine,	Lawrence.
Greenfield, Edmon,	Sabetha.
Greenlees, James Andrew,	Nowata, Okla.
Greer, Caroline Virginia,	Kansas City, Mo.
Grove, Theodora,	Newton.
Grubbs, Ora Francis,	Lawrence.
Haines, Ina St. Claire,	Edwardsville.
Harger, Ruth Moreau,	Abilene.
Hart, Walter Edward,	Newton.
Hazelrigg, Vivian Martha,	Burlington.
Healey, Florence,	Lawrence.
Heberling, Maynard Hiram,	Wakarusa.
Hemphill, Robert Warren, Jr.,	Norton.
Hodgson, Helen Dale,	Lawrence.
Horsley, Thomas J.,	Wichita.
Houston, Ethel Blanche,	Wichita.
Hoyt, William Valentine,	Lawrence.
Hunter, Martha Mae,	Lawrence.
Hunter, Mary Mabel,	Labette.
Janes, William Earl,	Spring Hill.
Jenkins, Ollie May,	Coffeyville.
Johnson, Everett Wallace,	Coffeyville.
Jones, Humphrey William,	Emporia.
Keeler, Dorothy Isabel,	Lawrence.
Keith, Eleanor Margaret,	Byars, Okla.
Keith, Mary Helen,	Lawrence.
Kennedy, Marjorie Luella,	Lawrence.
Klamm, Arthur George,	Basehor.
Knightley, Will John,	Wichita.
Krebs, Anna Margaret,	Lawrence.
Lambe, Ruth Sarah,	Lawrence.
Landen, Elsie Marie,	Lawrence.
LaRue, Mary Jane,	Lawrence.

JUNIORS—continued.

Latta, Trine Hardy,	Wichita.
Lear, Veta Blanche,	Columbus.
Leasure, Fred Jay,	La Cygne.
Light, Naomi,	Lawrence.
Lourey, Maude Tresp,	Frankfort.
Lucas, Meda Frances,	Ashland.
Luke, Ittai Albert,	Topeka.
Lux, Alta Marie,	Topeka.
Madden, John Curry,	Mound City.
Magathan, Wallace Clifton,	Marion.
Maloy, Daniel Henry,	Eureka.
Mann, Millie,	Grenola.
Marchbanks, Howard Earl,	Pittsburg.
Maris, Ward Hale,	Kansas City, Mo.
Marks, George Washington,	Lawrence.
Meservey, Frances Harris,	Kansas City, Mo.
Miller, Frank Porter,	Urich, Mo.
Miller, Ross H.,	Marion.
Milton, Iva Pearl,	Stafford.
Miner, Vern Edgar,	Burlingame.
Minner, Claude Baker,	Soldier.
Mitchell, Hannah Eileen,	Lawrence.
Moore, Joseph Earle,	Kansas City, Mo.
Morton, Clare Alice,	Green.
Morton, Gertrude Susan,	Topeka.
McFarland, Bernice,	Lawrence.
McKinlay, Chauncey Angus,	Wichita.
McMillin, Stewart Earl,	Wichita.
Nelson, Marie,	Greenleaf.
Neuschwanger, Amanda,	Osborne.
Neuschwanger, Sarah Maude,	Osborne.
Nevin, Leila May,	Lawrence.
Pasley, Harland Leroy,	Lawrence.
Perry, Arthur Choat,	Kansas City, Mo.
Pilkington, Lillian Elizabeth,	Garnett.
Pilkington, Luella Martha,	Garnett.
Pleasant, Eunice,	Burlington.
Powell, Frances Isabel,	Lawrence.
Preshaw, Ada May,	McPherson.
Reardon, Mae Cecelia,	Tonganoxie.
Rearick, Vida Vesta,	Osawatimie.
Reed, Dana O.,	Wichita.
Reed, Jessie Freeman,	Lawrence.
Richardson, Alma May,	Lawrence.
Richardson, Esther Pauline,	Lawrence.
Rigby, Frances Adelia,	Concordia.
Ritter, Clair August,	Clifton.
Robbins, Meredith,	Russell.
Roberts, Margaret,	La Cygne.
Rose, Charles William,	Winfield.
Ross, Paul,	Alden.
Rule, Ruth Barbara,	Lawrence.
Sankee, Ruth Eugenia,	Lawrence.
Scanland, Lester Allen,	Kansas City, Mo.
Schultz, Bernice Edmund,	Barnes.
Schwein, Bertha Olivia,	Randolph.
Sealy, Marie Patience,	Kansas City, Mo.
Shade, Florence May,	Ellsworth.
Shelley, Velma Esther,	Iola.
Short, Helen Marie,	Leavenworth.
Shuck, Leota Vere,	Kansas City.
Smith, Amarynthia Jenkins,	Louisville, Ky.
Smith, Charles Irving,	Sabetha.
Smith, Clarence,	Lawrence.
Smith, Lucile,	Kansas City, Mo.
Smith, William Addison,	Cuba.

JUNIORS—concluded.

Snider, Juliet,	Fort Scott.
Sollars, Mary Effie,	<i>Independence, Mo.</i>
Soper, Fred Lowe,	Hutchinson.
Spangler, Irma Bauman,	Lawrence.
Spotts, Vena Edna,	Lawrence.
Spreier, Christine,	Pawnee Rock.
Springer, Roy Stanley,	El Dorado.
Strahm, Vivian Susanna,	Lawrence.
Strickland, Charles Edwin,	Topeka.
Sutton, Edgar Milton,	Cawker City.
Swarts, Ralph Easterday,	Arkansas City.
Thomas, Robert Hodgens,	Highland.
Thompson, Mrs. Grace Elizabeth,	Mankato.
Thompson, Leslie Ray,	Netawaka.
Tipton, Denny Orlando,	Norwich.
Toews, Katharina,	Lyons.
Trimble, Roy Ira,	Sterling.
Tryon, Clare Henry,	Kansas City.
Tudor, Herbert Ovando,	Holton.
Tupper, Mary,	Lawrence.
VanSlyck, Willard Nicholas,	Topeka.
Venerable, Neosho Blaine,	Lawrence.
Villepique, Marguerite Olive,	Chanute.
Waddel, Alfred Francis,	Ottawa.
Ward, Dorothy Sandiford,	Lawrence.
Weaver, Ross Eberhardt,	Concordia.
West, Harry Andrew,	Yates Center.
Wheeler, Jessie Francis,	Rozel.
Wible, Elmer Thomas,	Holton.
Wiley, Ralph Crail,	Lawrence.
Wilhelm, Esther Rebecca,	Lawrence.
Williams, Seymore Edward,	Burlingame.
Willitt, Jessie Marie,	Hiawatha.
Wineinger, Viola May,	White Cloud.
Woods, Mabel Faye,	Burden.
Wren, Everett Westly,	Kincaid.
Wright, Charles Ray,	Winfield.
Wright, Estella May,	Lebanon.
Yates, Blyden William,	Lawrence.
Yeoman, Ralph,	Kingman.
Zimmerman, Levi Carl,	Sterling.

JUNIORS, 221

SOPHOMORES.

Ackers, Frank Carlyle,	Abilene.
Adams, Robert Harrison,	Caldwell.
Adrianee, Edith,	<i>Tonkawa, Okla.</i>
Alberty, Watie Murrell,	<i>Westville, Okla.</i>
Alderson, Aileen,	<i>Kansas City, Mo.</i>
Allen, Lewis George,	Lenexa.
Asher, Benjamin Harrison,	Great Bend.
Atkinson, Adrienne,	Lawrence.
Baerg, William J.,	Hillsboro.
Baker, Wilbur Arthur,	Woodston.
Banker, Louis Waldo,	Russell.
Barber, Ward Seymour H.,	Abilene.
Barteldes, Elsa,	Lawrence.
Beamer, Marion Ross,	Parsons.
Bishop, Joe Baldwin,	Lawrence.
Bixby, Benjamin Parker,	McPherson.
Blincoe, Ernest Edward,	Fort Scott.
Blincoe, Homer Raymond,	Columbus.
Boener, Edith Maria,	Lawrence.
Breyfogle, Beecher Frank,	Chanute.

SOPHOMORES—*continued.*

Brown, Hattie Beach,	Lawrence.
Brown, Olive Irene,	Lawrence.
Bruington, James Clarke,	Dodge City.
Buckhannan, Joseph Peter,	Mineola.
Bulger, Anna Marie,	Baxter Springs.
Burkhardt, Nellie Eileen,	Gashland, Mo.
Burtch, Euly H.,	Humboldt.
Carson, Cale W.,	Ashland.
Case, Edith May,	Kansas City, Mo.
Clasen, Arthur Charles,	Rosedale.
Coleman, Herbert Rockwood,	Lawrence.
Colin, James Carroll,	Argonia.
Collins, Will Howard,	Rocky Ford, Colo.
Cook, Eva Mabel,	Altamont.
Cook, Frank Finley,	Medicine Lodge.
Coors, Eva Mildred,	Humboldt.
Covey, Chester Claude,	Baxter Springs.
Cross, Edith Margaret,	Ellis.
Crowley, Corinne Ruth,	Lawrence.
Dahlene, Genevieve Dorothy,	Lawrence.
Davis, Margaret Rogers,	Lawrence.
Day, Hazel M.,	Canton.
DeBord, Elizabeth Lucille,	Kansas City, Mo.
Dehn, Clara Eloise,	Williamsburg.
Doty, Harry,	Hoisington.
Downs, Cornelia Mitchell,	Kansas City.
Dresia, Ethel May,	Columbus.
Dunmire, Ray Allen,	Lawrence.
Ebenstein, Evelyn Faye,	Columbus.
Edmiston, Ray Hammond,	Americus.
Edwards, Celeste,	Sedan.
Edwards, George Herbert, Jr.,	Kansas City, Mo.
Edwards, Raymond Franklin,	Chapman.
Elliott, Ethel Marion,	Lawrence.
Engel, Agnes Estelle,	Lawrence.
Evans, Harry Parker,	Edgerton.
Fair, George Harlan,	Lawrence.
Faris, Mabel A. Hughes,	Kanapolis.
Ferguson, Philip Mitchell,	Olathe.
Fincke, Carl William,	Rosedale.
Findley, Pauline,	Wichita.
Fischer, Erna Clara J.,	Lawrence.
Fogarty, Marie Frances,	Junction City.
Folks, Ray Jesse,	Linwood.
Fowler, Wayne Amos,	Chanute.
Frank, Frederick Rudolph,	Lawrence.
Furgason, Earl Ruben,	Garnett.
Garnett, Ida Drake,	Macon, Mo.
Garrison, George Blaine,	Eureka.
Garvey, Kenneth Alford,	Caney.
Gear, George Russell,	Buffalo.
Gentry, J. Malcolm,	Pond Creek, Okla.
Gettys, Florence Gertrude,	Concordia.
Giesel, Frederick William,	Overbrook.
Gillett, Wilbur Goodson,	Kingman.
Godding, Frank Eugene,	Lawrence.
Goff, Virginia Fern,	Lawrence.
Gorsuch, Pearl Elizabeth,	Sharon Springs.
Grady, Grover Quinton,	Alden.
Graff, Marie Octavia,	Topeka.
Graham, Helen Elmira,	Pueblo, Colo.
Grayson, Roy D.,	Lawrence.
Green, Martha Edith,	Kansas City, Mo.
Greever, Paul Ranous,	Tonganoxie.
Gregory, Wheeler Russell,	Kansas City, Mo.
Gustafson, Alma,	Lawrence.

SOPHOMORES—*continued.*

Hackney, Edward Blair,	Atchison.
Hamilton, John William,	Columbus.
Hammond, Vivian Beulah,	Morrill.
Hanson, Millie,	Arkansas City.
Harbaugh, Charles Allen,	Linwood.
Harbaugh, Harry Frants,	Linwood.
Harmon, Glenn DeWitt,	Wellington.
Harrell, George S.,	Washington.
Harsh, Leon A.,	Brookville, Pa.
Hayes, Helen Mary,	Lawrence.
Hayes, Lucius Bogle,	Lawrence.
Haynes, Arthur Haislet,	Sabetha.
Hebbe, Ortie May,	Tonkawa.
Henderson, Frank Bernard,	Kansas City, Mo.
Herrick, Genevieve Marie,	Kansas City, Mo.
Hilton, Kirk Estes,	Cottonwood Falls.
Himpel, Ella Mae,	Tonganoxie.
Himpel, Minnie Anna,	Tonganoxie.
Hoffman, Edward Wolcott,	Kansas City, Mo.
Houghton, Hellen Louisa,	Lawrence.
Housholder, Victor Hugo,	Columbus.
Howard, Joseph Griffin,	Nickerson.
Howden, Thomas Lawrence,	Skidmore, Mo.
Huff, Bernice,	Chapman.
Hull, Harriet Maye,	El Dorado.
Ingels, Edna Marie,	Lawrence.
Irwin, Gayl Lillian,	Lawrence.
Jaggar, Charlotte Columbia,	Oakley.
Johnson, Anna,	Lawrence.
Johnson, Lester Robert,	Kinsley.
Jones, Ogden Sherman,	Lawrence.
Joseph, Donald Burdett,	White Water.
Kauzer, Adelaide Marie,	Lawrence.
Kealing, Frances Frederica,	Quindaro.
Kellogg, Arthur Remington,	Kansas City, Mo.
Kennedy, James Randolph,	Fort Scott.
Kistler, Alfred Rudolph,	Alta Vista.
Knieper, Lillie Florence,	Hutchinson.
LaMer, Victor Kuhn,	Leavenworth.
Larabee, Myrtle Ethel,	Isabel.
Latimer, Windell Mitchell,	Greeley.
Levinson, Yale Norman,	Kansas City, Mo.
Linscheid, John Edward,	Arlington.
Litchen, Ruth Eleanor,	Leavenworth.
Loflin, Ethel Evangeline,	Ellis.
Long, Jacob Benjamin,	Lawrence.
Longenecker, Franklin Flory,	Emporia.
Lott, Kenneth Harrison,	Lawrence.
Lovejoy, Elizabeth Burt,	Lawrence.
Luckan, Louise Anne,	Lawrence.
Lupher, Dora Grace,	Lawrence.
Mack, Warren Willis,	Kansas City.
Malleis, Ida Elizabeth,	Halstead.
Martin, Elizabeth,	Hutchinson.
Mattice, Eugene,	Marion.
Mattoon, Harold Frank,	Lawrence.
May, Charlotte King,	Holton.
Means, Mrs. Boyd I.,	Arkansas City.
Melville, Ethel May,	Pittsburg.
Meredith, Una O.,	Eureka.
Meservey, Edwin Clement, Jr.,	Kansas City, Mo.
Meyer, Margaret Florence,	Kansas City, Mo.
Middleton, Avis,	Minneapolis.
Mierau, Jacob B.,	Newton.
Miller, Forest Jennings,	Sabetha.
Mitchell, Alexander Baldwin,	Lawrence.

SOPHOMORES—*continued.*

Moore, Charles Leeroy,	Galena.
Moore, Grover Cleveland,	Wayne.
Morrow, Elizabeth,	Lawrence.
Murdock, Imogene,	<i>Kansas City, Mo.</i>
Myers, Eleanor,	<i>Shawnee, Okla.</i>
Myers, Oliver Orville,	Fredonia.
McClure, Clara Belle,	Arkansas City.
McConnell, Silva Pearl,	Lawrence.
McCoskrie, Anita Elvin,	Chanute.
McDaniel, Hazel Burnice,	Oxford.
McDaniels, Sidonia Anna,	Lawrence.
McDonald, Paul Leroy,	McLouth.
McDowell, Clara Frances,	Arkansas City.
McGill, Maribelle,	Lawrence.
McKinney, William Ayres,	Howard.
Nachtmann, Madeline,	Junction City.
Neal, Paul Rexford,	Glasco.
Nigg, Arthur John,	Lawrence.
O'Donnell, Henry St. Clair,	Ellsworth.
Olney, Avery Fincher,	Lawrence.
Opperman, Elizabeth Margaret,	Baxter Springs.
Overman, Clio Ivine,	Lawrence.
Palmer, Adna,	Kingman.
Parkhurst, Dorothy,	Topeka.
Piotrowski, Martha Pauline,	Fort Scott.
Plowman, Earl Edward,	Lawrence.
Poos, Fred W.,	Potter.
Powell, Mary V.,	Lawrence.
Rader, Alexander Knox,	Howard.
Rader, Ralph Roscoe,	Howard.
Ragle, Harold Eugene,	Independence.
Ridgway, Wayne Anthony,	<i>Kansas City.</i>
Rigby, Helen Elaine,	Concordia.
Riney, Claude Raymond,	Dodge City.
Rose, Sibyl Frances,	Rosedale.
Rosenberg, Nathan,	<i>Kansas City, Mo.</i>
Ross, Albert Clayton,	Lawrence.
Roswurm, Elmer Chris,	St. John.
Russ, Marie Elizabeth,	<i>Falls City, Neb.</i>
Russell, Gertrude Mary,	El Dorado.
Ruth, Roy Fred,	Moundridge.
Sandberg, Minnie Vera,	<i>Kansas City, Mo.</i>
Sands, Frank Creagon,	Cherryvale.
Schenck, George Frederic,	Centerville.
Simpson, Duke Brayton,	Salina.
Smith, Bessie Lucille,	Colby.
Smith, Josephine Armored,	Wellington.
Smith, Ruth Amos,	Seneca.
Smithmeyer, Sophia Alice,	Lawrence.
Spicer, William Sidney,	Lawrence.
Sproull, Ralph David,	Lawrence.
Stanwaity, Mary,	Columbus.
Starin, Louis Martin,	Netawaka.
Stevens, Myra,	Lawrence.
Stone, Henry Nathaniel,	<i>Kansas City.</i>
Strahan, Florence Mabel,	<i>Belton, Mo.</i>
Strahan, Gladys Allene,	<i>Belton, Mo.</i>
Swinney, Raymond Wooldridge,	Rosedale.
Swisher, Maud,	Lawrence.
Syms, Judith Ann,	Rosedale.
Taylor, Clyde Frank,	Paola.
Taylor, Nellie R.,	White Cloud.
Templin, Marjorie Alta,	Lawrence.
Thornburrow, Mary Isabelle,	Wetmore.
Todd, Arnold C.,	Halstead.
Totten, Florence,	Beattie.

SOPHOMORES—concluded.

Treadway, Verma,	Newton.
Ulrich, Ethel Lenore,	Lawrence.
Vansell, George H.,	Muscotah.
Vermillion, Earl LeRoy,	Tescott.
Vincent, Estella Augusta,	Overbrook.
Walker, Fairfield Randall,	Lawrence.
Walker, Genevieve,	Salina.
Wallendorf, Leo Henry,	Kansas City.
Warren, McKinley,	Delphos.
Watson, Charles Hoyt,	Kansas City.
Weaver, Arthur Bullene,	Lawrence.
Welch, Howard Stanley,	Gas.
Wentworth, Hiram Hill,	Russell.
Whitaker, William Otto,	Kiowa.
Whitcher, Florence Mildred,	Concordia.
Williams, Charles G.,	Preston.
Williams, Letha Louise,	Lawrence.
Williams, Rush,	Clay Center.
Willson, Harry S.,	Waterville.
Wilson, Amos Evans, Jr.,	Leavenworth.
Wingart, Earl Wayne,	Topeka.
Witte, Lucile,	Shawnee, Okla.
Woolery, Robert Dale,	Olathe.
Zuercher, Peter H.,	White Water.

SOPHOMORES, 242

FRESHMEN.

Adams, Howard,	Maple Hill.
Aitken, King Phillip,	McPherson.
Albaugh, Houghton Samuel,	Topeka.
Allvine, Glendon,	Kansas City.
Alsop, Florence May,	Wakefield.
Anderson, Forrest Nelson,	Lawrence.
Armstrong, Helen,	Lawrence.
Arndt, Elmer Rudolph,	Nickerson.
Ashton, Madeline,	Lawrence.
Atkinson, Mary Prewitt,	Lawrence.
Atwood, Clarence C.,	Gardner.
Babcock, Amelia G.,	Lawrence.
Babcock, Rhea Mary,	Troy.
Bailey, Austin,	Lawrence.
Baker, LaVerna Reed,	Lawrence.
Baker, Milton Lindsley,	Lawrence.
Baldwin, Clifford Waste,	Seneca.
Baldwin, Frank Clifford,	Washington.
Barker, Roger Lee,	Kansas City.
Barnes, Samuel Edwin,	Blue Mound.
Barry, John William,	Crystal Springs.
Bartberger, Ethel Pauline,	South Park.
Bates, Merle Foster,	Williamstown.
Baysinger, Charles Earl,	Hartford.
Beach, George Henry,	Lawrence.
Beall, William Mosias,	Grantville.
Beamer, Lora Madge,	Lawrence.
Beamer, Nellie Folsome,	Lawrence.
Becker, Helen,	Ellsworth.
Beckley, Grace,	Lawrence.
Belknap, Paul Edward,	Atlanta.
Bennett, Edward Earl,	Stafford.
Bennett, Reuben George,	Newton.
Berg, George,	Hillsboro.
Berger, Samuel I.,	Medford, Okla.
Berry, Ralph Hudson,	Tulsa, Okla.
Bigelow, James Leo,	Gardner.

FRESHMEN—*continued.*

Bignall, Bliss Olin,	Alma.
Bischoff, Adele,	Washington.
Bishop, Kenneth Grant,	Kansas City.
Bitler, Fae,	Madison.
Bonser, Dean Vondon,	Neodesha.
Booth, Myron Murray,	Hutchinson.
Boothe, J. Vernon,	Englewood.
Bordenkircher, Cecilia Mary,	Burlington.
Bowes, Leroy,	Almena.
Beyd, Neal Thomas,	McLouth.
Braden, Ozilla Olive,	Elsmore.
Bradley, Aubrey,	Blue Mound.
Bradley, Isaac Franklin, Jr.,	Kansas City.
Brainard, Vincent,	Lecompton.
Brooks, Atwood Archibald,	Kansas City.
Brown, Harold F.,	Lathrop, Mo.
Brown, Homer Howden,	Lawrence.
Brown, Joyce Elizabeth,	Logan.
Bryant, Nellie,	Lyons.
Burger, Esther Luetta,	Fort Scott.
Burnett, Donald Charles,	Chanute.
Burnett, William Harrison,	Hutchinson.
Burton, Mary Cecile,	Kansas City, Mo.
Butin, James Abram,	Fredonia.
Cain, Augustus Robert,	Pittsburg.
Calhoun, Harold Robert,	Fort Scott.
Calkins, Willis N.,	Burlingame.
Campbell, Fred Ben,	Esbon.
Carlton, Paul Carey,	Garden City.
Carpenter, Izetta Pearl,	Kansas City.
Carr, Merritt Virginia,	Leavenworth.
Case, Helen Dale,	Wichita.
Chadwick, Eva Edith,	Loring.
Champlin, Mable Louise,	Phillipsburg.
Cheney, Ralph Edwin,	Gypsum.
Clayton, Gilbert Merton,	Hill City.
Cline, Neil Frank,	Kansas City, Mo.
Cohn, Maurice Wm.,	Kansas City, Mo.
Cole, Mildred Florence,	Lawrence.
Coleman, Margaret,	Superior, Neb.
Collier, Olin Dorwin,	Winfield.
Collins, Ralph Kable,	Rocky Ford, Colo.
Cooper, Donald W.,	Wichita.
Cooper, Howard Merton,	El Dorado.
Coors, Alice,	E. Las Vegas, N. M.
Cope, Byron Elsworth,	Humboldt.
Cope, John Gardner,	Lawrence.
Cornforth, Marguerite,	Lawrence.
Cory, Charles Henry,	Parsons.
Cory, Luella E.,	Lansing.
Cotter, James Rachel,	Kansas City, Mo.
Cotter, Mary Helen,	Kansas City, Mo.
Cowan, Angelo Theron,	Iola.
Crawford, Edward Strother,	Abilene.
Creager, Ernest Thornton,	La Cygne.
Creighton, Alexander Edwin,	Morrowville.
Cress, Erle Fletcher,	Perry, Okla.
Cummings, Edith Eleanor,	Beatrice, Neb.
Curry, Lewis Allison,	Dunavant.
Darlington, Dorothy Dugan,	Kansas City, Mo.
Davis, Beulah,	Hutchinson.
Davis, Bryan Llewellyn,	Fort Scott.
Davis, George Andrew,	Scottsville.
Davis, Ralph Waldo,	Newton.
Day, Harry Edward,	Canton.
Deibert, Emory Olin,	Florence, Colo.

FRESHMEN—continued.

DeRoin, Cecil Sunshine,	White Cloud.
Dietrich, Claire Lilburn,	<i>Kansas City, Mo.</i>
Dimick, John Harold,	<i>La Junta, Colo.</i>
Dodderidge, Kenneth Charles,	White City.
Dodge, John Edwin,	Oakley.
Doub, Charles Orville,	Augusta.
Dow, Jonathan Mahaffie,	Lawrence.
Draper, Elfrieda,	Lawrence.
Dugger, Vera Dorothy,	Lawrence.
Dyche, Junius Walter,	<i>Oklahoma City, Okla.</i>
Early, James Bernard,	Coldwater.
Earnest, Faith Elizabeth,	Washington.
Edmonds, Leslie Earl,	Emporia.
Egan, Lee Maynard,	<i>Kansas City, Mo.</i>
Eldridge, Charles Judson,	Topeka.
Elgin, Bernita Kathryn,	Lawrence.
Elliott, Altina Jane,	Lawrence.
Ellis, Ralph,	Lawrence.
Elswick, Ira Russell,	Caldwell.
Embry, Cecil Porter,	Pratt.
Engel, Lawrence Power,	Lawrence.
Ericson, Arthur William,	Junction City.
Evison, Fred,	Parsons.
Ewing, Ruth Edith,	Parsons.
Faidley, Leona Hazel,	Burr Oak.
Fair, Paul Rule,	Medicine Lodge.
Ferg, Gertrude,	Girard.
Ferguson, Ruth Naomi,	<i>Kansas City.</i>
Finch, Gula,	Lawrence.
Fischer, Wilbur Alexander,	Pleasanton.
Fitzgerald, Carl Eustace,	Dodge City.
FitzSimmons, Lee Joshua,	Cunningham.
Flagg, Donald Sergeant,	Perry.
Flaxbeard, Paul Walter,	Smith Center.
Flory, Rosa Ethel,	Lawrence.
Flory, Ruth Alida,	Howard.
Forbes, Wylie Hazard,	Wathena.
Fortner, Henry George,	Eudora.
Foster, Emily Garnette,	Independence.
Foust, Kenneth Howills,	Iola.
Freark, Christine Beatrice,	Lawrence.
Frederick, Ernest Dennis,	<i>Kansas City, Mo.</i>
Freienmuth, Alma Marjorie,	Tonganoxie.
Gaitskill, Joseph Ennis,	Girard.
Gilmore, Isabel Elizabeth,	Lawrence.
Gleissner, John M.,	Abilene.
Gloyne, Louis Boucher,	<i>Kansas City.</i>
Goddard, Joe Earl,	<i>Mena, Ark.</i>
Goppert, Ernest John,	Belleville.
Gott, Henry Vivion,	Xenia.
Grady, Archie Verne,	Lawrence.
Grady, Edward James,	Lansing.
Graham, Olive Ellen,	<i>Kansas City, Mo.</i>
Graves, Eugenia Jane,	Lawrence.
Green, Edna Faye,	Coffeyville.
Greer, Helen,	<i>Kansas City, Mo.</i>
Gregory, Bessie,	Lawrence.
Griesa, Charles Henry,	Lawrence.
Griesa, Theodore Scott,	Lawrence.
Hake, Wallace Otto,	Minneapolis.
Hale, Florence Evelyn,	Lawrence.
Hall, Marvin,	Salina.
Halloran, Charles Eben,	Ottawa.
Hamner, Zetha,	<i>Salt Lake City, Utah.</i>
Hanes, Anna Victoria,	Lawrence.
Hanna, Benjamin Earll,	Kinsley.

FRESHMEN—*continued.*

Hanson, Martha Marie,	Lawrence.
Harding, Elmer Herschell,	Coffeyville.
Harlan, Harry,	Smith Center.
Harris, George Raymond,	Moline.
Harris, Herschel Glenn,	Moline.
Hawkins, Ella Avonia,	Lincoln.
Heleker, Ralph Patterson,	Frankfort.
Henderson, Harry Edwin,	Alma.
Herman, Ralph Scallon,	Olathe.
Herron, Allen Murray,	Wellington.
Hershberger, Helen Louise,	Kansas City, Mo.
Hickman, Mildred Louise,	Hutchinson.
Hildinger, Lucile,	Lawrence.
Hill, Joseph Wilford,	Cherokee, Okla.
Hoadley, Corda Lea,	Fort Scott.
Hobbs, Arthur Alexander,	Kansas City, Mo.
Hoffman, Arthur Herman,	Enterprise.
Hoffman, Harry William,	Caldwell.
Hoffman, Rheuben Alvin,	Buffalo.
Holmes, Opal A.,	Lawrence.
Hoskins, William Clyde,	Lawrence.
Hosford, Vannetta,	Lawrence.
Houston, Lyda Snyder,	Lansing.
Huff, Bessie Maree,	Muskogee, Okla.
Hughes, Norma Louise,	Kansas City, Mo.
Humes, George Markley,	Bunker Hill.
Humphrey, Harry Lloyd,	Russell.
Hunt, Florence Jacobs,	Great Bend.
Hurst, Hazel Magaline,	Wichita.
Hurst, Helen,	Kansas City, Mo.
Huston, Nellie Georgina,	Belvue.
Hutchings, Harland Bartlett,	Kansas City, Mo.
Hutchings, Wemple Frank,	Kansas City.
Hutt, Donald Laptad,	Lawrence.
Iles, Doris,	Olathe.
Ilkenhans, Charles Abner,	Kansas City.
Imus, Avis Louise,	St. Joseph, Mo.
Inghram, Jessie,	Newton.
Irvin, Roy Robert,	Lawrence.
Irwin, Margaret L.,	Francis.
Jackson, Byrdie Delilah,	Kansas City.
Jamieson, Norma Janet,	Burlingame.
Jaroleman, Nellie Myrtle,	Muskogee, Okla.
Jenkins, John Henderson,	Kansas City.
Jenkins, John William,	Kansas City, Mo.
Jennerson, Matie Leah,	Lawrence.
Johnson, Chase Benjamin,	Lawrence.
Johnson, Edward Marion,	Lawrence.
Johnson, Esther Mae,	Wamego.
Johnson, Frederick Palmer,	St. Marys.
Johnson, John Milton,	Iola.
Johnson, Laura Elizabeth,	Kansas City, Mo.
Johnson, Minnie Eliza,	Topeka.
Johnson, Samuel Augustus,	Troy.
Jones, Claude Leonadis,	Lawrence.
Keeler, Ethel Myrtle,	Lawrence.
Keith, Robert Edmond,	Lawrence.
Kelly, Lee Roy,	Stafford.
Kelly, May Isabelle,	Kansas City, Mo.
Kennedy, John Dunbar,	Kansas City.
Kennedy, Nellie Irene,	Lawrence.
Kesler, Adelyn Ferne,	Hiawatha.
Kincaid, Amy Jean,	Olathe.
Kincaid, Charles Vertrees,	Blue Mound.
King, Adelaide,	Junction City.
King, Cassus Willard,	Marion.

FRESHMEN—continued.

Kinney, Genieve,	Larned.
Knapp, Roy Stanley,	White City.
Kretsch, Charlotte,	Perry.
Ladwig, Myrtle Angeline,	St. Joseph, Mo.
Laird, John Landon,	Kansas City, Mo.
Lamb, Errett Earl,	Yates Center.
Lamoreux, Wayne Harry,	Ness City.
Lankard, Frank Glenn,	Garnett.
Lashbrook, Loren Wesley,	Kansas City.
Lawrence, Georgia Bessie,	Lawrence.
Lehman, Adin Floyd,	Humboldt.
Levite, Will Bernard,	Wichita.
Lewis, Edward Everett,	Guthrie, Okla.
Liggett, Gladys M.,	Spivey.
Lill, Harboro Isaac,	Eudora.
Lillis, Ruth Marie,	Lawrence.
Lindsay, Robert Glick,	Kansas City.
Linn, Mary Minerva,	Lawrence.
Lobb, Fred,	McLouth.
Lobdell, Gertrude Nell,	Great Bend.
Long, Rebecca Enola,	Madison.
Lorimer, Margaret Emily,	Olathe.
Lorimer, Mary Blanche,	Olathe.
Lowry, John Emerson,	Paola.
Luckey, Elsie Fay,	Osborne.
Lyons, Theo. John,	Kansas City.
Lytle, William Orland,	Lawrence.
MacGregor, Riley William,	Medicine Lodge.
Macoubrie, Kathleen Elizabeth,	Olathe.
Malsed, John Arthur,	Parsons.
Marak, Josephine Clara,	Halstead.
Marcy, Joseph Ferdinand,	Concordia.
Martin, John Morrill,	Hutchinson.
Martin, Lottie Gretchen,	Kansas City, Mo.
Mather, Roy Arthur,	Centralia.
May, Edna Katherine,	Newton.
Melville, Edward William,	Eudora.
Mendenhall, Allcutt William,	Kansas City, Mo.
Meyer, Gladys Euola,	Lawrence.
Millard, Lela Madge,	Larned.
Miller, Fredericka Frances,	Wathena.
Miner, Lyle Merlin,	Burlingame.
Miner, Oliver William,	Santa Fe.
Moody, Edward Rex,	Lenexa.
Moore, Guy Rowley,	Lawrence.
Moore, Helen,	Hutchinson.
Moore, Henry Ray,	Burlington.
Morgan, Lillian La Vera,	Arkansas City.
Morris, William Robinson,	Minneapolis.
Morrow, William Clay,	Blue Mound.
Moser, Martha Minnie,	Blue Rapids.
Mullen, Blanche Veronica,	Hutchinson.
Mulloy, Thomas Nicholas,	Lincoln Center.
Musgrave, Samuel Curtis,	Humboldt.
Myers, Ethel Pearl,	Lawrence.
Myers, William Randolph,	Lawrence.
McBride, Elizabeth Lena,	Kansas City, Mo.
McCanles, Lulu Lorena,	Lawrence.
McColloch, Harry Van,	Lawrence.
McCormac, Harry Ernest,	Mound City.
McCormac, Leonard Jerome,	Yates Center.
McCune, Frances Ethel,	Formoso.
McDonald, Ira Malcolm,	Lawrence.
McDonald, Josephine,	Kansas City, Mo.
McGalliard, Everett Raymond,	Troy.
McGinness, Byron Franklin,	Aulne.

FRESHMEN—*continued.*

McGugin, Harold Clement,	Coffeyville.
McKay, James Blaine,	Olathe.
McMeel, Bernard Frances,	Meade.
McNaught, James Bernard,	Girard.
Naftzger, Frederic Denman,	Wichita.
Nelson, Lawrence Strong,	Lawrence.
Newman, Albert Paul,	Coffeyville.
Nigg, Milton Wesley,	Lawrence.
Nodurft, Elmer J.,	Cherryvale.
Noonan, John Francis,	Fort Scott.
Norrick, Roy Hezekiah,	Bayard.
O'Brien, Floyd Delos,	Lawrence.
O'Brien, Ida,	Independence.
Oechsli, Waldo Raymond,	Lawrence.
O'Keefe, Arthur Joseph,	Fort Leavenworth.
O'Keefe, John Desmond,	Leavenworth.
Osborne, Marion Marguerite,	Wichita.
Owen, Claude Braley,	Reece.
Padgett, Earl Calvin,	Glasco.
Park, Lewis Ezra,	Englewood.
Parker, Charles Elmer,	Caney.
Parker, Clarence Osman,	Caney.
Parnell, Mabel,	Lawrence.
Payne, Francis William,	Lawrence.
Peairs, Ruth,	Lawrence.
Pearce, Raymond Kunkel,	Beeler.
Peters, Thomas Reed,	Rosedale.
Peterson, Elsie Velma,	Spring Hill.
Petty, Earl Cole,	Lawrence.
Phillely, Myra Nan,	St. Joseph, Mo.
Piepenburg, Aaron Frederick,	Glen Elder.
Pinckard, Karl Gibson,	Kansas City, Mo.
Plowman, Ruth Anita,	Lawrence.
Plunkett, James Willis,	Kansas City, Mo.
Porter, Andrew Milton,	Mayetta.
Porter, Glen E.,	Ottawa.
Pratt, Elsie Maud,	Lawrence.
Pratt, Florence Evelyn,	Independence.
Priest, James Chester,	Sabetha.
Pringle, Kenneth Wilkie,	Eskridge.
Ramsey, Daisy Leona,	Lawrence.
Ramsey, James Blaine,	Garnett.
Randolph, Clarence Albert,	Lawrence.
Randolph, William Marcus,	Lawrence.
Rankin, Veda Rhey,	Paola.
Rathfon, Lawrence Paul,	Fort Scott.
Redmond, Mabel Ethel,	Lawrence.
Reed, Clement Austin,	Burlington.
Reed, Robert Henry,	Almena.
Reynolds, Roy Albert,	Paola.
Rhinehart, Marvin Newton,	Spring Hill.
Rhodes, Theodore James,	Frankfort.
Rhudy, Florence,	Troy.
Ringolsky, Sidney,	Kansas City, Mo.
Rinker, Emory Roy,	Wa Keeney.
Rishel, Glenn Austin,	Hutchinson.
Risley, Mabel Rose,	Blackwell, Okla.
Ritter, Neva,	Iola.
Roberts, Eduard Murray,	Pittsburg.
Robertson, John Breathitt,	Kansas City, Mo.
Roessler, Emma Beatrice,	Isabel.
Rose, Robert Bell,	Rosedale.
Ross, Esther Viola,	Lawrence.
Routh, Cedric Earl,	Seneca.
Royse, Frank Elmer,	Mt. Hope.
Ruble, Mae,	Lawrence.

FRESHMEN—*continued.*

Ruehmann, Elsie Kathryn,	Wamego.
Russell, Mary Ruth,	Newton.
Ryan, Joseph Daniel,	Lincoln.
Sage, Lucile Mayme,	Concordia.
Sallee, Bertha V.,	Hutchinson.
Sanborn, George Burdette,	Anadarko, Okla.
Sapp, Helen Margaret,	Galena.
Saunders, Lella Gloyd,	Kansas City, Mo.
Sautter, Paul H.,	Horton.
Scalpino, William,	Everest.
Schaefer, Alva Blaine,	Wichita.
Schmidt, Willa Katherine,	Kansas City, Mo.
Schmitter, Leland Carl,	Gypsum.
Scholz, Clara Mary Emelia,	Frankfort.
Schultz, Martha Myrtle,	Iola.
Scott, Ewing Carruth,	Iola.
Scrivner, Vernon Guy,	Kansas City, Mo.
Seckinger, Katherine,	Olathe.
Sheldenberger, Florence Ruth,	Leavenworth.
Sheridan, Philip Record,	Paola.
Shimmons, Lelia Marie,	Baldwin.
Shinn, Henry Arthur,	Cherryvale.
Shomber, Garrett Bruce,	Ottawa.
Short, Harold Catlin, Jr.,	Leavenworth.
Simmons, Stella,	Lawrence.
Simpson, Naomi Corenne,	Topeka.
Sitzler, Pearl,	Lawrence.
Skinner, Robert Clark,	Kansas City, Mo.
Slade, Anna Marie,	Oskaloosa.
Smith, Agnes Eleanor,	Seneca.
Smith, Bertha May,	Kansas City.
Smith, Charles William,	Stockton.
Smith, Errett Garrison,	Lawrence.
Smith, Hylas Chester,	White Water.
Smith, Lillian Eleanor,	Independence, Mo.
Smith, Robert,	Fort Scott.
Smith, Walter Edgar,	Horton.
Sollars, Nellie Port,	Independence, Mo.
Solt, Earnest Lowell,	Barnes.
Spake, Mildred Dorothy,	Kansas City.
Sparks, Anna Laura,	Bison.
Sprinkle, Lester Atchley,	Topeka.
Stateler, Ernest Salathial,	Minneola.
Stevens, Roy Ulysses,	Kansas City, Mo.
Stevenson, Marguerite,	Kansas City, Mo.
Stewart, Margaret Anne,	Baxter Springs.
Stivison, Roy Elliot,	Lyndon.
Stone, Katharine,	Kansas City.
Streeter, Helen Marie,	Kansas City.
Strickland, Geraldine,	Le Roy.
Strong, Evelyn Robinson,	Lawrence.
Strother, George Beauregard,	Kansas City, Mo.
Swanson, Esther Ethel,	Marquette.
Swingle, Harry Wilson,	Lawrence.
Swisher, Jubal Cleveland,	Gypsum.
Tanner, Edward Wadsworth,	Lawrence.
Taylor, Thomas Thompson, Jr.,	Lewistown, Mont.
Teachenor, Dix,	Kansas City, Mo.
Teasley, Raymond Dosh,	Concordia.
Terry, George Sylvester,	Chanute.
Thiessen, Emma,	Beloit.
Thomas, Helene Mary,	Waterville.
Thompson, Earl Gobelle,	Lewistown, Mont.
Thompson, Leland,	Marion.
Thoren, Lulu Gertrude,	Eudora.
Thorpe, Helen Gertrude,	Morganville.

FRESHMEN—concluded.

Tihen, Henry Nelson,	Andale.
Todd, Earnest Alfred,	Lawrence.
Trant, Helen Katherine,	Perry.
Travis, Chester Earl,	Coffeyville.
Trees, Ione H.,	Sabetha.
Trego, Linton Lewelling,	Humboldt.
Trueblood, Asa James,	Bronson.
Truesdell, Harold Andrew,	Burden.
Tucker, Marcus Othello,	Hutchinson.
Vieregg, Frank Ray,	Lawrence.
Vogel, Arthur David,	Leavenworth.
Vose, William Ellsworth, Jr.,	Ellis.
Waldo, Guy Lucian,	Ellis.
Walters, Raimon Garhardt,	Garden City.
Ward, Marguerite,	Leadville, Colo.
Warner, John Walker,	Beattie.
Waynick, Florence Eloise,	Wellington.
Weatherhogg, Vera,	Kansas City, Mo.
Weaver, Jennie Kathleen,	Blue Mound.
Weber, Ernest Le Roy,	Clifton.
West, Ray Augustine,	Anthony.
White, Delbert Earl,	McCune.
Whitten, Frederick Easton,	Wellington.
Wieman, Charles Louis,	Larned.
Wiley, Ralph R.,	El Dorado.
Wilhelmi, Ilsa Emma,	Lawrence.
Wilhelmi, Irma Louise,	Lawrence.
Wilhite, Bessie,	Rosedale.
Williams, Sam George,	Preston.
Williamson, Clarence Edgar,	Rosedale.
Wilson, Gertrude Allen,	Kansas City, Mo.
Winey, Harold Hinman,	Lawrence.
Winsor, Alice,	Morrowville.
Winsor, Lonzo Augustus,	Lawrence.
Wire, John Pomeroy,	Kinsley.
Wolf, Eleanor Adelia,	Kansas City.
Wolf, Lillian Frances,	Kansas City.
Woolsey, William Edwin,	Formoso.
Wuerth, Edward Elmore,	Salina.
Wuthnow, Edwin William,	Dillon.
Zoellner, Grace Barbara,	Tonganoxie.
Zook, Katie Pauline,	Fort Scott.

FRESHMEN, 475

SPECIALS.

Adair, M. Emma,	Garnett.
Adler, Harry Simon,	Kansas City, Mo.
Altman, John Stephen,	Masontown, Pa.
Anawalt, Harmon Fred, Jr.,	Kansas City, Mo.
Anderson, Ruth Caroline,	Lawrence.
Armantrout, Paul Lawrence,	Guthrie, Okla.
Beeson, E. W.,	Wichita.
Benson, Florence,	El Dorado.
Blackmar, Winifred Margaret,	Lawrence.
Bottomly, Victor,	Kensington.
Briggs, Arta Priscilla,	Lawrence.
Brock, Ivy,	Lawrence.
Broderick, George Harold,	Lawrence.
Brown, Alice Lenore,	Lawrence.
Brown, Leon Charles,	Wichita.
Cain, William,	Atchison.
Cheney, Rollo Hestwood,	Gypsum City.
Coffey, Frank Ellsworth,	Kansas City.
Connell, Ott Leckett,	Topeka.
Coolidge, James R.,	Smith Center.

SPECIALS—continued.

Cowper, Mary Octavine,	Lawrence.
Daniels, Jenkins Morris,	Kansas City, Mo.
Danskin, Floyd,	Aulne.
Deardorff, Earl Newton,	La Cygne.
Dearing, Robert Thomas,	Brookville.
Dodd, John Milton,	Esbon.
Doggett, Walter,	Leoti.
Dolman, Katherine,	Topeka.
Dunaway, Dorothy,	Osawatomie.
Eaton, Ella J.,	Highland.
Ellis, Marian,	Kansas City.
Falls, Clarence Edward,	Salina.
Ferguson, Philip M.,	Olathe.
Fiske, Leland E.,	Kansas City, Mo.
Gier, Wilber Joseph,	Hepler.
Gregory, Marguerite Electa,	Lawrence.
Gregory, William Edward,	Cottonwood Falls.
Guillet, Joseph Phocion,	Kansas City, Mo.
Gunning, Robert E. Lee,	Wichita.
Harbordt, Henrietta Sophia,	Lawrence.
Harder, Oscar Edward,	Lawrence.
Hart, Bert L.,	Lakin.
Hastings, Havilah Ebert,	Olathe.
Haworth, Henry Huntsman,	Lawrence.
Helm, Charles Frank,	La Junta, Colo.
Henley, Gladys Farichild,	Lawrence.
Herod, Robert W.,	Lawrence.
Hibbs, Carl Guy,	Lawrence.
Hinesley, William Earle,	Lawrence.
Hodges, A. Omar,	Kansas City.
Hodgson, Elizabeth,	Wichita.
Hogrefe, Pearl,	Wichita.
Holbrook, Charles Verner,	Olathe.
Holcomb, Jessie,	Parsons.
Hopkins, Louise Marjorie,	Ellsworth.
Howard, J. Denton,	Eureka.
Howe, Leon Ennis,	Almena.
Hyre, Edna M.,	Lawrence.
Ingalls, Samuel Robert,	Washington.
Jenkins, Harry Byron,	Linwood.
Johnson, Anne Louise,	Hamilton.
Johnson, Fred Austin,	Kansas City, Mo.
Johnson, Irene Lorine,	Kansas City, Mo.
Jones, Frank L.,	Alma.
Kalin, Oscar Theodore,	Clay Center.
Kauffman, Le Roy L.,	Hutchinson.
Kaufman, Margaret,	Lawrence.
Kincaid, Flossie,	Lawrence.
Kinney, May,	Larned.
Kruse, Schiller,	Lawrence.
Laderer, Olive J.,	McPherson.
Laizure, Lawellin B.,	Lawrence.
LaRue, Helen Beatrice,	Lawrence.
Leidigh, James T.,	Hutchinson.
Leonard, Claire Elizabeth,	Wamego.
Loveless, Floyd L.,	Lawrence.
Maag, Oscar L.,	Russell.
Martin, Webb D.,	Lawrence.
Mason, Lowell,	Lawrence.
Mathews, Dorothy,	Kansas City, Mo.
Mickey, DeWitt D.,	Junction City.
Miller, Lena V.,	Lawrence.
Mitchell, Claire Winifred,	Geuda Springs.
Moore, Leo G.,	Lawrence.
Mowry, Elza C.,	Cortez, Colo.
Mylroie, John M.,	Lawrence.

SPECIALS—*moncluded.*

McAllister, Abel James,	Lawrence.
McCoskrie, Winona,	Chanute.
McCoy, Rachel Nora,	Wamego.
Neuschwanger, Elmer Graybill,	Osborne.
Nolan, Amelia,	Lamont, Okla.
Northrup, Lewis Orlonzo,	Iola.
Oldfield, Verna Cline,	La Cygne.
Pond, Raymond Eugene,	Dodge City.
Prugh, William Boyd,	Kansas City.
Purcell, Audray Lavery,	Leavenworth.
Rabourne, Emma Pauline,	Lawrence.
Rader, Valentine S.,	Lawrence.
Ramsay, Ronald Henry,	Atchison.
Rankin, Gretchen,	Lawrence.
Ransom, Mabel Edith,	Lawrence.
Ready, J. Wendell,	Wellington.
Reber, John Alfred,	Pleasanton.
Reymond, Paul L.,	Kansas City, Mo.
Riley, Francis H. M.,	Kansas City, Mo.
Riseley, Jerry Burr,	Stockton.
Root, Thomas Bullene,	Kansas City, Mo.
Runnels, Annie,	Kansas City, Mo.
Salmon, Glenn Marshall,	St. John.
Sayles, Leonard Troy,	Lawrence.
Schmalhorst, Hoeting Dyer,	Kansas City.
Schroeder, Jacob P.,	Hillsboro.
Schwartz, Theodore C.,	Kansas City, Mo.
Segel, Joseph,	McPherson.
Seipt, Mrs. Irene Schumo,	Lawrence.
Shaeffer, Charles Bunting,	Kansas City, Mo.
Sharp, John B.,	Topeka.
Shinn, Byron Lee,	Chanute.
Simpson, Jane Mary,	Topeka.
Smart, Charlotte Ellene,	Ottawa.
Smith, Frank Herron,	Lawrence.
Smith, Guy Chester,	Lawrence.
Smith, Maud Ethel,	Sterling.
Somers, J. Glenn,	Newton.
Soudker, Mattill Alfred,	Barnes.
Spellings, Charles S.,	Kansas City, Mo.
Stacey, William Arthur,	Abilene.
Stadler, Stephen August,	Rosedale.
Steele, Horace Eaton,	Lawrence.
Stephens, Charles E.,	Lawrence.
Stevens, Francis Herbert,	Lawrence.
Stillier, Charles Mattison,	Florence.
Summers, Flossie,	Wichita.
Swanson, John Frederick,	Marquette.
Taylor, Elliott Sibley,	Alton, Ill.
Taylor, Georgia Mae,	Leavenworth.
Tester, Katherine Virginia,	Coffeyville.
Villepigue, Paul Fabrian,	Chanute.
Walton, Charles Camp,	Wichita.
Watson, Lella,	Hutchinson.
White, William Morris,	Quindaro.
Whitten, Willis G.,	Marysville.
Wilson, J. Christy,	Topeka.
Wolverton, Verle Leigh,	Oklahoma City, Okla.
Wood, William Melville,	Lawrence.
Woolverton, Mary Elizabeth,	Abilene.

School of Engineering.

SENIORS.

Armstrong, Clinton Garrett,	<i>Kansas City, Mo.</i>
Arnold, Leroy,	Piedmont.
Belt, Edison,	Fredonia.
Bodman, Russell John,	Kansas City.
Bragg, Gilbert A.,	<i>St. Joseph, Mo.</i>
Broderick, George Harold,	Neodesha.
Bunn, Paul King,	La Crosse.
Burnham, Harry Edwin,	Wa Keeney.
Campion, Henry Hinkson,	Leavenworth.
Carpenter, Ross Lawrence,	Hiawatha.
Carson, Earl,	Peabody.
Chase, Harry Valentine,	Lawrence.
Coats, Charles Melvin,	Chanute.
Cone, Charles Luther,	Lawrence.
Crawford, Don Kahr,	Topeka.
Daniels, James Ganson,	Leavenworth.
Dodd, Clark Insley,	Fredonia.
Dunn, George Chester,	Hanover.
Finney, Roy A.,	Wamego.
Fox, William Fern,	Lawrence.
Frush, Ralph Sydney,	Kansas City.
Fuchs, Alfred Robert,	Kansas City.
Fuller, O. O.,	Geneseo.
Glenn, Guy Cecil,	Paola.
Godfrey, Truman Milo,	<i>Kansas City, Mo.</i>
Grignard, Emile E.,	Lawrence.
Hainbach, Charles John,	Chanute.
Halleck, Philo,	Abilene.
Hartman, Elmer Edward,	Kansas City.
Helm, Charles Frank,	<i>La Junta, Colo.</i>
Hennessey, Thomas Patrick,	Fulton.
Hoadley, Herbert Eugene,	Fort Scott.
Hobbs, Maurice Hill,	Fairview.
Hoffman, Ralph Nicolas,	Parsons.
Howard, J. Denton,	Eureka.
Jaques, Ewart Paul,	Kansas City.
Johnson, Amos Daniel,	<i>Kansas City, Mo.</i>
Jones, Thomas Roy,	Arkansas City.
Keraus, Arthur S.,	Wa Keeney.
Knerr, Lewis Ellsworth,	<i>Kansas City, Mo.</i>
Leatherock, Lloyd Edmond,	Cherryvale.
Lyder, Ernest Elmer,	Paola.
Madlem, Leo Smith,	Lawrence.
Malcolmson, James Donovan,	<i>Kansas City, Mo.</i>
Martin, Ransom Melvin,	Herington.
Messenger, Frank DeWitt,	Lawrence.
Meyer, Paul Alexander,	Centralia.
Mickey, D. DeWitt,	Junction City.
Moffett, Joseph Orr, Jr.,	Peabody.
Moore, Walter Nathaniel,	<i>Kansas City, Mo.</i>
Morton, Ira William,	Girard.
Murphey, George Robert,	<i>Oklahoma City, Okla.</i>
Nagle, Henry George,	<i>Kansas City, Mo.</i>
Peterson, George Oscar,	Lawrence.
Plank, William Jay,	Lawrence.
Price, William Francis, Jr.,	Topeka.
Richardson, Howard Logan,	Lawrence.
Riordan, Joseph Alphonsus,	Solomon.
Roberts, Clay,	Kansas City.

SENIORS—concluded.

Rush, Earl Samuel,	Axtell.
Ruth, B. Alvin,	Moundridge.
Schooley, Sparks Sylvester,	Lawrence.
Schwab, James West,	Enid, Okla.
Schwartz, Theodore,	Kansas City, Mo.
Seibel, Clifford Winslow,	Kansas City, Mo.
Shockley, Clyde Arthur,	Kansas City, Mo.
Staley, Harry,	Richmond.
Tangeman, William Henry,	Newton.
Thompson, Wayne Douglas,	Wichita.
Turkington, John Edward,	Cherokee.
Underwood, Andrew Benonia,	Kansas City, Mo.
VanHouten, Edwin A.,	Topeka.
Veatch, Francis Montgomery,	Atchison.
Ward, Richard B.,	Belleville.
Wright, Earl Leon,	Pleasanton.
Young, James Arthur,	Lawrence.

SENIORS, 76

JUNIORS.

Ackerman, Henry Calvin,	Rosedale.
Adams, Clyde Melvin,	Topeka.
Allen, Glenn Lee,	Lawrence.
Allison, Lawrence M.,	Lawrence.
Angevine, Leland Charles,	Lawrence.
Armstrong, Frank Logan,	Lawrence.
Baldwin, Ernest Joy,	Cherryvale.
Baughner, Howard Nathan,	Kinsley.
Bliss, John Lawrence,	Winfield.
Bolinger, Lyman E.,	Clearwater.
Bracewell, Russell Starkey,	Kincaid.
Brouk, James Anton,	Wilson.
Brown, Loren Elden,	Delphos.
Brown, Will E.,	Robinson.
Butler, John Shadel,	Kansas City, Mo.
Cadwell, Harold Vernon,	Nowata, Okla.
Cassingham, Chester Snyder,	Warrensburg, Mo.
Charpie, Samuel James,	Kingman.
Cissna, Volney Judson,	Fort Scott.
Clarke, Clarence Stephen,	Springfield, Mo.
Coggins, Claude Lou,	Wamego.
Cunnick, Paul Carlton,	Lawrence.
Devlin, Floyd Barnard,	Newton.
Dingman, Oscar Aldrich,	Emporia.
Dodd, Leslie Harold,	Langdon.
Fairchild, Samuel Gilbert,	Hutchinson.
Fecht, Arthur John,	Kansas City.
Feierabend, Harold Herman,	Atchison.
Fillmore, Benjamin DeWitt,	Blue Rapids.
Fowler, Charles Vern,	Lawrence.
Greenlees, Charles Robert,	Lawrence.
Haag, Samuel McCarty,	Admire.
Hansen, Herbert C.,	Wellington.
Harsha, Luman McLaine,	Partridge.
Harshbarger, Eugene Lee,	Topeka.
Hazen, Daniel Francis,	Lawrence.
Hellener, Earl Edgerton,	Atchison.
Hess, Raymond,	Perry.
Holmes, Merle Verne,	Kansas City.
Hostetler, Curtis B.,	Belleville.
Hughes, Alfred Samuel,	Lawrence.
Hunter, Earl William,	Lawrence.
Jackson, Lyman Lewis,	Clay Center.
Kayser, Grier Milton,	Wilson.
King, Harlen Dwight,	Cawker City.

SENIORS—concluded.

Kinnear, Lawrence Wilson,	<i>New York City.</i>
Kleihege, Daniel Bertram,	Bison.
Kleihege, Henry Joseph,	Bison.
LaRue, James Eugene,	Lawrence.
Lauterbach, William John,	Colby.
Leake, John Bertram,	<i>Kansas City, Mo.</i>
Lynch, Francis John,	Herington.
Malcolmson, William Jack,	<i>Kansas City, Mo.</i>
Maltby, Arthur Raymond,	McPherson.
Mellick, Lloyd V.,	La Crosse.
Moore, Leo George,	Lawrence.
Moore, Raymond Francis,	Atchison.
Mylroie, John Miller,	Lawrence.
McCurry, John Allen,	Parsons.
Newby, Howard Lee,	<i>Acme, Tex.</i>
Nofsinger, Lewis Esmonde,	<i>Kansas City, Mo.</i>
Oman, Carl,	Garnett.
Painter, Carl Elliott,	Wichita.
Parker, James,	Independence.
Parkhurst, Ivan Paul,	Kinsley.
Pauly, Howard Clyde,	Lawrence.
Poundstone, Leon Harmon,	<i>Blackwell, Okla.</i>
Rankin, Donald Mark,	Paola.
Reid, Donald,	<i>Kansas City, Mo.</i>
Reymond, Paul LeGrand,	<i>Kansas City, Mo.</i>
Richards, Addison,	<i>Kansas City, Mo.</i>
Richardson, Encell Campbell,	Lawrence.
Rohrer, Walter Elmer,	<i>McAlister, Okla.</i>
Segel, Joseph,	McPherson.
Seger, Ralph Logan,	Topeka.
Severns, William H.,	Garnett.
Siegfried, Harry,	Burlington.
Smith, John Rhodes,	Sterling.
Sproull, John Steele,	Lawrence.
Steele, Russel Benton,	Garnett.
Tholen, Charles Webster,	Leavenworth.
Thomas, Raymond Sankey,	Lawrence.
Tillotson, Luther Rudolph,	Topeka.
Veirs, Cyrus Robb,	Independence.
Washburn, George Avery,	Topeka.
Weaver, Glenn Shellborn,	Concordia.
Weidlein, William Dale,	Olathe.
Welsh, Harry Esmond,	Chanute.
Wiedeman, Franz Gustav,	Lawrence.
Wisé, Lyle Deards,	Lawrence.

JUNIORS, 90

SOPHOMORES.

Ames, Edwin Lee,	Caldwell.
Barth, Leon John,	<i>Broken Arrow, Okla.</i>
Bayles, Charles Gilbert,	Garrison.
Benedict, Frank Griffith,	Lawrence.
Bean, Lawrence Augustine,	La Crosse.
Berwick, Jo Douglas,	Lawrence.
Blachly, Fred Eben,	Herington.
Bocker, Leon Morris,	Solomon.
Bockemohle, Clinton Linus August,	Ellinwood.
Bradbridge, Ernest Eugene,	Hutchinson.
Brown, Hugh Reid,	Altoona.
Brown, Nathan Wallace,	Lawrence.
Burgess, Warren C.,	<i>Beatrice, Neb.</i>
Burnham, Elmer Jay,	<i>Kansas City.</i>
Carpenter, Loring Townsend,	Seneca.
Chapple, James Melvin,	Troy.
Constant, Clyde Stanley,	Lawrence.

SOPHOMORES—continued.

Curfman, Harry Monroe,	Winfield.
Day, Lloyd Joseph,	Glen Elder.
Degen, Fred Samuel,	Kansas City, Mo.
Dimmitt, Clarence Elmer,	Lawrence.
Ellis, Paul Ovid,	Parsons.
English, Marion Leslie,	Dodge City.
Francis, Chester M.,	Cherryvale.
Galloway, Ralph Arthur,	Hutchinson.
Geiger, Charles F.,	Ottawa.
Glaze, Carl Wilber,	Lyons.
Gray, Alfred,	Paxico.
Groft, Andrew Joshua,	Wa Keeney.
Harding, Clarence William,	Leavenworth.
Harding, Gilman Case,	Leavenworth.
Harris, Alfred,	Emporia.
Hartman, Fritz Vincent,	Junction City.
Harvey, Everett Clyde,	Ulrich, Mo.
Haskin, Fletcher,	Frankfort.
Holmes, Charles Bolivar,	Lawrence.
Hunter, Hayden Records,	Bucklin.
Hurd, Harold Baldwin,	Kansas City, Mo.
Jackson, Lloyd Earl,	Chanute.
Jespersen, Conrad Morris,	Lawrence.
Jones, Forrest Emery,	Neodesha.
Keeling, Ross Custer,	Oakley.
Kruse, Schiller,	Lawrence.
Lackey, Donald Haldane,	Peabody.
Laizure, Lawellin Boyd,	Lawrence.
Lentz, Roscoe Vernon,	Kansas City, Mo.
Lindley, Clifford Benjamin,	Medicine Lodge.
Logan, Carl Gillies,	Kansas City, Mo.
Marsh, George William, Jr.,	Kincaid.
Means, Boyd Irwin,	Arkansas City.
Melvin, Lughton Russell,	Iola.
Miller, Frank Herbert,	Clay Center.
Miltner, Elmo Franklin,	Wichita.
Murphy, Willard David,	Lawrence.
McCune, Malcolm,	Leavenworth.
McFadden, Roy True,	Salina.
McKnight, Harry Ray,	Cherryvale.
Nelson, Stanley Barrows,	Paris, Tex.
Nutting, Floyd Lester,	Russell.
Orton, James Wilbur,	Centerville, Mo.
Painter, Charles Jesse,	Barclay.
Payne, Carmen Green,	Olathe.
Pierce, Norman Jean,	White Cloud.
Pinkerton, Howard King,	Olathe.
Potter, Orrin Thomas,	Sapulpa, Okla.
Putnam, Glen Harold,	Lawrence.
Rader, Valentine Simpson,	Lawrence.
Ruth, Oren H.,	Moundridge.
Rutherford, Lawrence Winfield,	Douglass.
Sammons, George Benjamin,	Sabetha.
Sanders, Earl Russell,	Lawrence.
Scaggs, Claude Albertine,	Winona.
Schmidt, Karl W.,	Kansas City, Mo.
Schooley, Emmet Franklin,	Kansas City, Mo.
Seibert, John Franklin,	Augusta.
Spangler, Karl Bauman,	Lawrence.
Sterling, Allen,	Lawrence.
Strachan, Norman Fraser,	Eudora.
Sweeney, Ben A.,	Kansas City, Mo.
Tait, Ralph Shannon,	Fort Scott.
Templin, Richard Lawrence,	Minneapolis.
Tobin, Clarence Lewis,	Frankfort.
Truesdell, Sidney Augustus,	Wathena.

SOPHOMORES—concluded.

Wade, Hugh Reese,	<i>Kansas City, Mo.</i>
Walker, Roy Melvin,	<i>Lawrence.</i>
Weibel, Leo N.,	<i>Lawrence.</i>
Welch, Erroll Meredith,	<i>Cashion, Okla.</i>
Whitten, Willis George,	<i>Marysville.</i>

SOPHOMORES, 88

FRESHMEN.

Ackers, Deane Emmett,	<i>Abilene.</i>
Adams, Merle,	<i>Perry.</i>
Alt, Glenn Leslie,	<i>Denton.</i>
Ammons, Oly Cecil,	<i>Arkansas City.</i>
Anderson, Carl Edward,	<i>Kansas City.</i>
Archer, Ralph,	<i>Garnett.</i>
Arnold, Ernest,	<i>Cottonwood Falls.</i>
Baer, Carl Toeys,	<i>Moundridge.</i>
Baird, Hugh Edwin,	<i>Formoso.</i>
Bartell, Albert Raymond,	<i>Wakefield.</i>
Beckley, Drew Trout,	<i>Lawrence.</i>
Benson, Thatcher Wylys,	<i>Independence.</i>
Bohannon, Hillory,	<i>Glasco.</i>
Bost, Frank Noel Orr,	<i>Douglass.</i>
Buckles, Robert William,	<i>Kansas City, Mo.</i>
Burt, Archie Ray,	<i>Blue Mound.</i>
Burton, Willard Augustus,	<i>Mound City.</i>
Campbell, Samuel Erle,	<i>Meade.</i>
Cantrell, Lorraine Vivian,	<i>Pittsburg.</i>
Caplinger, Robert Franklin,	<i>Hutchinson.</i>
Carter, Alva Bruce,	<i>Lawrence.</i>
Chandler, Harold Lyman,	<i>Parsons.</i>
Chaves, Galer Millard,	<i>Atchison.</i>
Chrisman, Joseph,	<i>Independence, Mo.</i>
Clarke, Stewart,	<i>Marysville.</i>
Clayton, Ross Herbert,	<i>Hill City.</i>
Clover, Earl Lister,	<i>Humboldt.</i>
Cole, Lawrence Eduard,	<i>Lawrence.</i>
Coolbaugh, Charles William,	<i>Stockton.</i>
Cort, Marcus Robert,	<i>Kansas City.</i>
Dahlgren, Earl William,	<i>Kansas City.</i>
Daum, Merrill Freeland,	<i>Lawrence.</i>
David, Clyde Isaac,	<i>Crystal Springs.</i>
Davis, Guy Foster,	<i>Lawrence.</i>
Deewall, Raymond Gregory,	<i>Argonia.</i>
Denton, Roy Steve,	<i>Humboldt.</i>
Diehl, Paul Adam,	<i>Peck.</i>
Dorsey, Eli Farrell,	<i>Lawrence.</i>
Durland, Harry Johnston,	<i>Centralia.</i>
Duvall, Eugene Norlin,	<i>Hutchinson.</i>
Elmore, Frank Baugh,	<i>Lyndon.</i>
Evans, Jesse Melvin,	<i>Pleasanton.</i>
Finch, Floyd Pierce,	<i>Lawrence.</i>
Fishback, James Orville,	<i>Emporia.</i>
Fiske, Leland Emberson,	<i>Kansas City, Mo.</i>
Flagg, George Horace,	<i>Pleasanton.</i>
Fletcher, Claude Charles,	<i>Glasco.</i>
Freienmuth, Ernest Edward,	<i>Tonganoxie.</i>
Fuller, Alvar Wendell,	<i>Salina.</i>
Gearhart, Walter Russell,	<i>Englewood.</i>
Gleadall, Joe,	<i>Hutchinson.</i>
Goldtrap, Walter Arthur,	<i>Lawrence.</i>
Hall, Thomas Newton,	<i>Emporia.</i>
Hammond, John Isaac,	<i>Towanda.</i>
Hawkins, George,	<i>Coffeyville.</i>
Henry, Howard F.,	<i>Lecompton.</i>
Herrod, Richard Alan,	<i>Webb City, Mo.</i>

FRESHMEN—*continued.*

Hite, Oral Lee,	Lawrence.
Hunt, James Lee,	Kansas City.
Jackson, James Edwin,	Clements.
James, Darley Shively,	Lawrence.
Jellison, Arthur Asa,	Wilson.
Johnson, Francis Louis,	Russell.
Julien, Charles LeRoy,	Wamego.
Kane, Herbert Warren,	Lawrence.
Lawyer, Elmer Julius,	Iola.
Machovec, Edward Paul,	Kansas City, Mo.
Madden, Frank Augustus,	Abilene.
Manley, Marion,	Junction City.
Maris, Clyde,	Stockton.
Martin, Dan Curtis,	Fort Morgan, Colo.
Matteson, Walter William,	Nowata, Okla.
Meredith, Wayland Halteman,	Joplin, Mo.
Miller, John Adelbert, Jr.,	Coffeyville.
Moore, William Austin,	Topeka.
Morton, Thomas Q.,	Atchison.
Moses, Owen Clifford,	Maple Hill.
Moyer, Samuel Parkhurst,	Blue Rapids.
Murphy, Robert Cleveland,	Independence, Mo.
McNeil, Frederick,	Bonner Springs.
Neal, Gay,	Anthony.
Neal, Roy Orley,	Independence.
Nelson, Alfred Kibler,	Iola.
Newcomer, Earl Thomas,	Kansas City, Mo.
Newton, Verne Thomas,	Winfield.
Nicolay, Carl Louis,	Abilene.
Nicolet, Arthur Coombs,	Kansas City, Mo.
Paul, Homer Harrison,	Augusta.
Pickering, Walter Roscoe,	Galena.
Raemer, Fred William,	Herkimer.
Rambo, Carl Wilson,	Arkansas City.
Rathert, George August,	Junction City.
Rhoads, Earl Newton,	Andale.
Riley, William Stillman,	Garnett.
Romick, John Henry,	Maple Hill.
Rush, Lowell Lee,	Kansas City, Mo.
Russell, Frank Liscum,	Lawrence.
Russell, Harlan Arthur,	Lawrence.
Russell, George Raymond,	Rosedale.
Samson, Henry Ernest,	Quinter.
Shade, David George,	Kansas City.
Sharp, John Beyard,	Topeka.
Smee, George Reezin,	Wa Keeney.
Smith, Gail Arthur,	Great Bend.
Smith, Joseph P., Jr.,	Kansas City, Mo.
Smith, Leo Frisly,	Larned.
Stead, George Allen,	Calista.
Stevens, Harry M.,	Lawrence.
Stillwell, Jerry Edward,	Erie.
Stotts, Glen P.,	Yates Center.
Stryker, Wilburn,	Fredonia.
Sunderland, Elmer James,	Kansas City, Mo.
Sykes, Clifford Burton,	Murdock.
Templin, Arthur W.,	Minneapolis.
Turkington, Victor Howard,	Cherokee.
Tustin, Robert Thomas,	Clayton, Idaho.
VanDerlip, Clyde Leroy,	Ottawa.
Vawter, Rufus Lloyd,	Coffeyville.
Wagner, Page Paschal,	Concordia.
Wakefield, Claude Hammond,	Anthony.
Wegner, Walter Kurt,	Onaga.
Welch, Clarence Vawter,	Edna.
Wheelock, Harold Eugene,	Kansas City, Mo.

FRESHMEN—concluded.

Wickstrum, Arthur Stephen,	<i>Independence, Mo.</i>
Williams, Ira,	<i>Wilson.</i>
Wright, Kenneth W.,	<i>Fort Scott.</i>

FRESHMEN, 126

SPECIALS.

Bennett, James Leroy,	<i>Carthage, Mo.</i>
Brooks, Leo Stanley,	<i>Mound City.</i>
Campbell, Louis Jasper,	<i>Lawrence.</i>
Covalt, William Benjamin,	<i>Mound Valley.</i>
Heidenreich, Edwin Lee, Jr.,	<i>Kansas City, Mo.</i>
Hodgins, William Tottenham,	<i>Topeka.</i>
Madden, Milton Finney,	<i>Topeka.</i>
Meyn, Fred Otto,	<i>Kansas City.</i>
Pike, Harry F.,	<i>Fall River.</i>
Poland, Clare Archie,	<i>Atchison.</i>
Preston, Joe Bradford,	<i>Kansas City.</i>
Smith, Lewis Benedict,	<i>Lawrence.</i>

SPECIALS, 12

School of Fine Arts.

SENIORS.

Bedford, Marion Page,	<i>Grand Rapids, Mich.</i>
Brown, Lucille Crozier,	Lawrence.
Gabriel, Edith Margaret,	North Topeka.
Gilmore, Carrie Harrison,	El Dorado.
Henry, Gladys Margaret,	Lawrence.
Jackson, Clara Elizabeth,	Columbus.
Keith, Erma,	Seneca.
Kuchera, Leora Bessie,	Belleville.
LeSuer, Lida Charles,	Lawrence.
Mackie, Elizabeth Elsie,	Lawrence.
Matkins, Lillian Grace,	Lawrence.
Murray, Pauline,	Wellington.
Overstreet, Maria Leone,	Blue Rapids.
Palmer, Mary Margaret,	Lawrence.
Parrott, Lucy Lubel,	<i>Kansas City, Mo.</i>
Smith, Frances Mildred,	Stockton.
Stevens, Bertha,	Parsons.

SENIORS, 17

JUNIORS.

Blair, Mary Fay,	Spring Hill.
Burnham, Ruth,	Lawrence.
Cook, Lydia Emma,	<i>Kansas City, Mo.</i>
Deibert, Ruth,	<i>Florence, Colo.</i>
Ellsworth, Edith Myrtle,	Cherryvale.
Fox, Ruth Clyda,	Lawrence.
Garver, Mrs. John D.,	Lawrence.
Hinesley, Edith Elizabeth,	Lawrence.
Huffman, Genevieve Aleen,	Abilene.
Hyre, Florence,	Lawrence.
Laderer, Olive Joy,	McPherson.
Longabaugh, Hazel Joy,	Lawrence.
Luckan, Charlotte Marguerite,	Lawrence.
Lyon, Edna Charlotta,	Lawrence.
Miller, Bess,	El Dorado.
Miller, Edna Leone,	Leavenworth.
Morgan, Dorothy Margaret,	Clay Center.
Murray, Anna Elizabeth,	Junction City.
Robbins, Leroy,	Lawrence.
Shanks, Kate Elizabeth,	Simpson.
Smith, Etta Augusta,	Lawrence.
Strahm, Estelle,	Sabetha.
Underwood, Addie,	Lawrence.
Whittemore, Anna,	Waterville.
Wilson, Rhea Faye,	Columbus.
Woolsey, Helen Clair,	Lawrence.

JUNIORS, 26

SOPHOMORES.

Annadown, Emily,	Lawrence.
Arnett, Mabel Wilma,	Lawrence.
Clark, Merle Bertha,	Ottawa.
Cooper, Edith Margaret,	Lawrence.
Davis, Helen Mar,	<i>Beatrice, Neb.</i>
Fennell, Constance,	<i>Kansas City.</i>
Ingerson, Anice Tacy,	Holton.
Jarvis, Mary Anna,	<i>Arkansas City.</i>

SOPHOMORES—concluded.

Kent, Isabelle Mary,	Lawrence.
Ketels, Marie,	Lawrence.
Kreider, Lucile Minerva,	Lawrence.
Lambert, Ruth Ester,	Baker.
Lutz, Hattie Loretta,	Jewell.
Lutz, Nellie Estell,	Jewell.
Moses, Edith Agnes,	Carthage, Mo.
Powell, Clara Gault,	Lawrence.
Ryan, Francis Winton,	Willis.
Singleton, Bonnie Jean,	Benedict.
Taber, Helen Frances,	Holton.

SOPHOMORES, 19

FRESHMEN.

Bailey, Lucile,	Lawrence.
Blakey, Jessie Elizabeth,	Pleasanton.
Dawson, Helen,	Great Bend.
Derge, Mona,	Lebanon.
DeWitt, Edwinna Alice,	Lyons.
French, Shirley Blanch,	Kansas City, Mo.
Fronk, Zella Dea,	Humboldt.
Fuller, Abby Louise,	Lawrence.
Kanaga, Nina Louise,	Lawrence.
Keith, Parthenia,	Seneca.
Kernodle, Ruth Julia,	Grand View, Mo.
Kirby, Anna,	Baldwin,
Lambert, Edna Cecil,	Horton.
Lockwood, John Ward,	Atchison.
Mackie, Emma R.,	Lawrence.
Mackie, Mabel,	Scammon.
Marshall, Ruth,	Lawrence.
Nelson, Gladys,	Cassoday.
Saile, Francis,	Lawrence.
Sawtell, Davida Berryl,	Kansas City.
Smith, Merle Ella,	Neosho Rapids.
Smyth, Corinne Ruth,	Eureka.
Thompson, Polly,	St. Joseph, Mo.
Trueblood, Sarah Edna,	Glen Elder.
Uhrich, Helen May,	Kansas City.
Walker, Winnie Flora,	Lawrence.
Williams, Hazel Irene,	Lawrence.
Winters, Kathleen E.,	Kansas City, Mo.

FRESHMEN, 28

SPECIALS.

Alford, Sylvia Daphne,	Lawrence.
Bales, Elsie Ruth,	Lawrence.
Becker, Edith Marguerite,	Lawrence.
Brown, Zealia May,	Lawrence.
Brush, Bessie Frances,	Lawrence.
Burgess, Hazel Lavina,	Olathe.
Burke, Esther Margaret,	Lawrence.
Caldwell, Mabel Wilhelmina,	Lecompton.
Connell, Eunice,	Bazine.
Crane, Helen Cyrena,	Kansas City, Mo.
Cross, Edith,	Ellis.
Crow, Amanda Otis,	Gridley.
Crow, Mabel Gladys,	Gridley.
Dean, Elfie Mary,	Marion.
Deitrich, Claire,	Kansas City, Mo.
Dunakin, Ray Randle,	Lawrence.
Edgerton, Lyla Della,	Randolph.
Griffiths, Hazel Mary,	Gridley.
Grimes, Mary Elizabeth,	Paola.

SPECIALS—moncluded.

Hamilton, Idyl Maud,	Weir.
Hansen, Kate Ingeborg,	Logan.
Harris, Pearl Emley,	Great Bend.
Hook, Camille Catherine,	Sabetha.
Hotchkiss, Marie,	Lawrence.
Hoyt, William,	Lawrence.
Huston, Nellie,	Belvue.
Karnes, Bertha Louella,	Lawrence.
Kaufman, Margaret Jeanette,	Lawrence.
Kneiper, Lillie,	Hutchinson.
Lambe, Ruth,	Lawrence.
Liggett, Gladys,	Spivey.
Martin, John M.,	Hutchinson.
Messick, Lodema Zelida,	Hill City.
Millard, Ruth Dee,	Lawrence.
Morgan, Lillian,	Arkansas City.
Morris, Genevieve Clare,	Lawrence.
McConnell, Silva,	Lawrence.
McDowell, Rollin Curtis,	Greenleaf.
McFarlin, Mamie Cornelia,	Lawrence.
McShea, Maude Isabelle,	Chapman.
Nelson, Grace Gilbert,	Lawrence.
Nutter, Mrs. Leota Anna,	Agenda.
Olmstead, Mildred Frances,	Lawrence.
Perry, Eugene Schuyler,	Wichita.
Petz, Gretchen,	Windom.
Pickens, Mrs. Nelle,	Lawrence.
Potwin, Elsie Mary,	Lyons.
Preyer, Mary,	Lawrence.
Pugh, Luella Patterson,	Lawrence.
Raymond, Bessie Noyes,	Lawrence.
Reynolds, Cora,	Lawrence.
Ridenour, Lula Spiker,	Emporia.
Rose, Venita Irene,	Stafford.
Rudolph, Mrs. Rose Viola,	Lawrence.
Russell, Irene,	Kansas City.
Ruttinger, Cora E.,	Kansas City, Mo.
Scheurer, Clara Henrietta,	Lawrence.
Scholz, Clara,	Frankfort.
Shelden, Marjorie,	El Dorado.
Simons, Blanche Louise,	Lawrence.
Spangler, Myra Edith,	Lecompton.
Stewart, Crete,	Kansas City, Mo.
Swingle, Estella Kathleen,	Lawrence.
Thomas, Mary S.,	Waterville.
Treworgy, Eleanor Griffin,	Lawrence.
Tripp, Lena,	Lawrence.
Uhrlaub, Agnes Helen,	Lawrence.
Von Schultz, Guy,	Coldwater.
Wellman, Louie Helen,	Topeka.
Wetzel, Pauline Opal,	Lawrence.
Whitman, Muriel,	Lawrence.
Zutavern, Elsa Louise,	Great Bend.

School of Law.

SENIORS.

Adair, Hugh Rogers,	Ellis.
Allen, William Albert,	Lawrence.
Bierer, Samuel, Jr.,	Hiawatha.
Boehm, Walter,	Hutchinson.
Bramwell, Willis K.,	Belleville.
Brook, Isaiah John,	Blue Mound.
Brown, Loren Vaughn,	Kansas City, Mo.
Burford, Lewis Wesley,	La Harpe.
Burnett, Clanrold A.,	Girard.
Cain, William Quiggan,	Atchison.
Campbell, Robert James,	Kansas City, Mo.
Carlton, Clarence Hays,	Garden City.
Caswell, Arthur Bernard,	Belleville.
Clark, Russell H.,	Kansas City, Mo.
Clarke, Charles Williamson,	Lawrence.
Collins, Percy Henry,	Belleville.
Crandall, Harry Cecil,	Little River.
Davis, Ben Wesley,	Eskridge.
Davis, Roy Clarence,	Osage City.
Dolde, Henry Charles,	Leavenworth.
Edmonson, Otis Milton,	Winchester.
Eisenmayer, Walter Charles,	Springfield, Mo.
Ewald, Clem Howard,	Lawrence.
Fisher, Harry Wilfred,	Pleasanton.
Gorsuch, Harris Foster,	Sharon Springs.
Gribble, Ulysses Allison,	Arkansas City.
Griffin, Walter T.,	Lawrence.
Halliday, George Alvan,	Topeka.
Hepworth, Richards Fields G.,	Burlingame.
Hicks, Carl Sidney,	Lawrence.
Hoffman, John Christian,	Enterprise.
Hughes, William Marshal,	Holton.
Irwin, E. Ira,	Guthrie, Okla.
Jones, William I.,	Alma.
Keplinger, Lewis Wolfkill,	Kansas City.
Killarney, Earl,	Atchison.
Konantz, Charles Lynn,	Fort Scott.
Lindsay, Roy O.,	Gilman City.
Magill, Robert Ward,	Wichita.
Maris, Charles Franklin,	Lawrence.
Morrow, Calvin,	Washington.
McLain, Wray Ernest,	Newton.
Nees, Paul Bertram,	Independence.
Neibling, Carl Augustus,	Holton.
Nesbitt, Frank W.,	Garnett.
Norris, William Sidney,	Kansas City, Mo.
Rambo, Hal Fletcher,	Ottawa.
Ready, J. Wendell,	Wellington.
Rogers, Roy Edward,	Bronson.
Simmons, Kenneth Kipple,	Baldwin.
Snyder, Harry Earnest,	Dodge City.
Stephens, Charles Elmo,	Kansas City, Mo.
Stoll, Sam Brown,	Atchison.
Sullivan, Clifford,	Burrton.
Thorn, Furman Thomas,	Wellsville.
Trousdale, Walter Joseph,	Newton.
Weede, Orlin Albert,	Atchison.
Wilhelm, Louis Robert,	Lawrence.

SENIORS—concluded.

Wisdom, Glen Albert,	<i>Kansas City, Mo.</i>
Woulfe, Robert,	Newton.
Zook, Arthur David,	Wellington.

SENIORS, 61

MIDDLES.

Ammons, Ernest Hugh,	Arkansas City.
Atherton, Oliver T.,	Emporia.
Baker, Arthur,	Chanute.
Bantleon, Clifford Augustus,	Kansas City.
Beeson, Ellwood Walter,	Wichita.
Bowron, Caleb Fletcher,	Hiawatha.
Brown, Marley Roberts,	Lawrence.
Buckles, Cale Olin,	Peru.
Buzick, Alonson Ruchman,	Sylvan Grove.
Campbell, Adrian Brooke,	Lawrence.
Codding, John Sullivan,	Westmoreland.
Colin, Edward Cecil,	Argonia.
Conkey, Claude Oliver,	Pleasanton.
Coolidge, James Roger,	Smith Center.
Cox, Richard Albert,	Lawrence.
Crow, James Frank,	<i>Kansas City, Mo.</i>
Cubbison, Paul Kenneth,	Kansas City.
Darnall, Charles Bliss,	Argentine.
DeVernardi, Albert, Jr.,	<i>Kansas City, Mo.</i>
Detwiler, John Eli,	Smith Center.
Dunham, Burney Malloy,	Altoona.
Fairchild, Charles Clement,	Lawrence.
Fischer, Floyd Edward,	Wamego.
Guilfoyle, Matthew,	Wamego.
Hand, Hugh Hamlin,	Parsons.
Hart, Bert Leland,	Lakin.
Hatcher, Ward V.,	Cherryvale.
Heller, Harvey Augustus,	Iola.
Higley, Harold J.,	Sterling.
Holloway, Webster Watterson,	Hutchinson.
Howden, William Martin, Jr.,	<i>Skidmore, Mo.</i>
Hurd Bruce,	Abilene.
Johnson, Chester Arthur,	Alma.
Kelley, Milton William,	Lawrence.
Kimball, Webster Wagner,	Parsons.
Kirchner, Benjamin Jacob,	Winfield.
Lambert, Walter Andrew,	Leavenworth.
Lindsey, Alva Frank,	<i>Gilman City, Mo.</i>
Lynch, Joseph Edward,	Herington.
Martin, Walter Bunn,	Lawrence.
Martin, Webb D.,	<i>Fort Morgan, Colo.</i>
Miller, Frank Ellwood,	Topeka.
Miller, John Richards,	La Cygne.
Moffitt, David Claire,	Wichita.
Morris, Lawrence B.,	Junction City.
Morton, William Marmaduke,	<i>St. Joseph, Mo.</i>
McClelland, Frank Melanchthon,	Lawrence.
McClure, William Herbert,	Republic.
McConnell, Ray Marmaduke,	Lawrence.
McCoskrie, Winona Ivy,	Chanute.
Neibling, Seward Charles,	Hiawatha.
Pfouts, Ralph Ulysses,	Lancaster.
Redmond, Roscoe Royal,	Ottawa.
Reid, Roderick Vincent,	Clay Center.
Royer, Paul Henry,	Abilene.
Schnierle, Herbert Alden,	Kansas City.
Schwinn, William Herschel,	Wellington.
Smith, Eugene Bryan,	Lawrence.
Sommers, Herbert Calvin,	Abilene.

MIDDLES—concluded.

Sowers, Clarence Ralph,	Wichita.
Spake, Ralph Emmett,	Kansas City.
Spellings, Charles S.,	Kansas City, Mo.
Steaper, Bert,	Lawrence.
Sterns, Frank,	Hiaawatha.
Stewart, Clarence Churchill,	Baldwin.
Stuewe, Edward William,	Alma.
Surber, Paul Dwight,	Independence.
Teed, Albert Schermerhorn,	Hutchinson.
Vilato, Jose Eleno,	Havana, Cuba.
Von Schrititz, Guy White,	Coldwater.
Weber, Oliver Walter,	Lawrence.
Welch, Edgar Chauncey,	Kansas City, Mo.
Wightman, Wade Walter,	Wichita.
Wilson, Harold Wesley,	Horton.
Wurster, Chester Leighton,	Wichita.
Ziegler, William Ray,	Newkirk, Okla.

MIDDLES, 76

JUNIORS.

Alexander, Charles Freeman,	Stockton.
Baker, William Reuna,	Rosedale.
Banker, Willis Rothwell,	Tahlequah, Okla.
Biggs, George Dutton,	Concordia.
Bishop, Lloyd Clifton,	Conway Springs.
Black, Floyd Davidson,	Severy.
Bond, James,	Bala.
Bottomly, Victor,	Kensington.
Branden, Russell,	Kingman.
Buck, Walter Philip,	Wichita.
Buzick, William Alonson,	Sylvan Grove.
Calene, Glenn Clifton,	Sylvan Grove.
Campbell, Daniel Halstead,	Tulsa, Okla.
Carlson, David Ernest,	Wichita.
Carson, Earl,	Peabody.
Coleman, Aaron,	Castleton.
Coombs, Edwin Seger,	Kansas City, Mo.
Dalton, George Edward,	Junction City.
Davis, Eugene Wilson,	Chapman.
Degen, Samuel M.,	Pittsburg.
DeLongy, Hal P.,	Mena, Ark.
Doggett, Walter Martin,	Leoti.
Farley, James Newton,	Hutchinson.
Gibson, Admud Jennings,	McCune.
Greenstreet, John Coleman,	Parsons.
Hanson, Harry W.,	Kansas City.
Hartman, Ezra Mozart,	Junction City.
Haynes, Charles Leroy,	Emporia.
Helvern, Lewie Elwood, Jr.,	Beattie.
Hinshaw, Thomas Justin,	Winfield.
Hornbaker, Clyde O.,	Castleton.
Horsley, Thomas J.,	Wichita.
Houston, Guy Robert,	Wichita.
Hurst, Leonard Lee,	Emporia.
Huxman, Walter August,	Pretty Prairie.
Jones, Frank Lewis,	Alma.
Kelley, Carl David,	Lawrence.
Klamm, Arthur G.,	Basehor.
Krehbiel, Carl C.,	Moundridge.
Lewis, Kelton,	Kinsley.
Lewis, Ralph Emerson,	Topeka.
Linley, Robert Wilson,	Atchison.
Loveless, Floyd Lester,	Wetmore.
Lowe, Willoughby Miller,	Newton.
Lupton, Edwin Henry,	Lawrence.

JUNIORS—*concluded.*

Miller, Clarence,	Independence.
Miller, Justin I.,	Emporia.
Milton, Charlie Lewis,	Lawrence.
Morrow, William McKinley,	Washington.
Myers, Warren J.,	Hutchinson.
Probst, John Henry,	Arkansas City.
Root, Albert Mortimer, Jr.,	Kansas City.
Mowry, Elza Christopher,	Cortez, Colo.
McElhenny, George Dean,	Detroit.
Ossweiler, Theodore Edward, Jr.,	Andale.
Painter, William C.,	Raymore, Mo.
Potter, Earl,	Salina.
Rieger, Oscar,	Kansas City, Mo.
Russell, Walter Scott,	Lawrence.
Sellers, Robert L.,	Paola.
Siever, Carl H.,	Wichita.
Simpson, Henry Clay,	Lincoln.
Smith, Gordon,	Lawrence.
Smith, Lester Lloyd,	Chanute.
Tilberg, Walter Haggerdy August,	Dwight.
Waugh, William Kansas,	Eskridge.
Weible, Merle Hazzard,	Coffeyville.
Wells, Ernest Worden,	Lawrence.
Whitney, Elmer Lemuel,	Talmage.
Williams, John A.,	Buffalo, N. Y.
Worden, Arthur Milton,	Wellington.

JUNIORS, 71

SPECIALS.

Anderson, Henry Clay,	Kansas City, Mo.
Emick, William Earl,	Lawrence.
Gardner, Harry,	Lawrence.
Henry, Victor George,	Wichita.
Moon, Arthur,	Lawrence.
Skidmore, George Lewis,	Wichita.
Somers, J. Glenn,	Newton.

SPECIALS, 7

School of Pharmacy.

SENIORS.

FOUR-YEAR COURSE.

Lee, Charles Oren,	McCune.
Maag, Oscar Lewis,	Russell.

THREE-YEAR COURSE.

Parker, Henry Charles,	Bonner Springs.
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TWO-YEAR COURSE.

Brice, William Harvey,	Glen Elder.
Cipra, Winslow Joseph,	Holyrood.
Crane, Albert Brown,	Osage City.
Ebnother, James Raymond,	Downs.
Egbert, Dwight Gilbert,	Ness City.
Fitch, Nolan Alvin,	Oakhill.
Gleed, Clarence Augusta,	Lawrence.
Gray, Moses Nathaneal,	Lawrence.
Hill, Howard William,	Elsmore.
King, Fritz John,	Enterprise.
Lewellen, Willard,	Gaylord.
Pearl, George Andrew,	Lakin.
Pool, Benjamin Earl,	Norcatul.
Powell, Byrd Oscar,	Adair, Okla.
Roese, Karl Louis,	McCune.
Saylor, Charles Jacob,	Burrton.
Scholz, George Frederic,	Frankfort.
Sonneman, Bert E.,	Blue Mound.
Steinhauer, Louis Edward,	Leavenworth.
Stewart, William,	Clay Center.
Warren, Leonard Douglass,	Topeka.

SENIORS, 24

JUNIORS.

FOUR-YEAR COURSE.

Berger, Samuel Ira,	Lawrence.
Burtch, Euly H.,	Humboldt.
Early, James B.,	Lawrence.
Humes, George Markley,	bunker Hill.
Johnson, Alvin Ralph,	Oneida.
Johnson, Melvin Orlo,	Oneida.

TWO-YEAR COURSE.

Barnes, William Phineas,	Blue Mound.
Berkley, Lewis Wilson,	Independence, Mo.
Chinery, Frank Lawrence,	Coffeyville.
Daniel, Harvey Oscar,	Oberlin.
Euler, Clyde,	Blair.
Fair, Otto Dowenge,	McCune.
Fitzpatrick, Walter Roy,	Lawrence.
Garvie, William Tracie,	Humboldt.
Gates, Ernest Elmer,	Galena.
Goyette, Lewis Edward,	Elsmore.
Gray, John Yale,	Lawrence.
Gsell, W. Earl,	Olathe.
Gwinner, Sidney Grant,	Chanute.
Hall, George Guy,	Salina.
Hamilton, Eugene Francis,	Partridge.
Henderson, Ralph Wilson,	Burden.

JUNIORS—concluded.

Heston, Mayo Dickens,	Danbury, Neb.
Hill, Lance Cleo,	Lawrence.
Hostinsky, Joseph,	Cuba.
Hull, John DeWitt,	Tulsa, Okla.
Johnson, Emsley Thomas,	Thomas, Okla.
Kennedy, Carl Paris,	Lawrence.
Kuhl, Cecil Herbert,	Cottonwood Falls.
Kurtz, David Harvey,	Fort Scott.
Lockwood, Howard Demnon,	Wichita.
Meadows, Lawrence Allen,	St. Joseph, Mo.
Merritt, John Paul,	Hiawatha.
Messick, John Weaver,	Monument.
Mickie, Ernest Furnas,	Olathe.
Miller, Roy Laurence,	Hays.
Pedroja, Frank,	Hamilton.
Rau, William Fremont,	Wakefield.
Schroers, Harry George,	St. Joseph, Mo.
Smart, John Edwin,	Kansas City, Mo.
Smith, Lynn,	Spring Hill.
Stevenson, Tudor Marks,	Oberlin.
Taylor, Hubert Clarence,	Ness City.
Thorpe, Lewis Nathaniel,	Morganville.
Walters, Matthew Lawrence,	Scammon.
Wandel, Claude Bolton,	Norwich.
Wassam, George Duncan,	Neodesha.
Williams, Daniel Adolph,	Burlingame.
Woodard, Gardner William,	Lawrence.
Yager, Christian,	Hiattville.
Yeager, Claude Ross,	Cottonwood Falls.

JUNIORS, 51

SOPHOMORES.

FOUR-YEAR COURSE.

Day, Hazel M.,	Canton.
Hilton, Estes K.,	Cottonwood Falls.

THREE-YEAR COURSE.

Treece, Elbert Lee,	Centerville.
Wylder, Lester Wesley,	Oberlin.

SOPHOMORES, 4

SPECIALS.

Hubbell, Howard Marshall,	San Francisco, Cal.
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SPECIALS, 1

School of Medicine.

SENIORS.

Hale, Arthur E.,	Rosedale.
Hyde, Ida Henrietta,	Lawrence.
Layton, LeRoy Wilford,	Kansas City.
Myers, Joseph Wakefield,	Galva.
Quiring, Walter Otho,	Newton.
Simon, William Ebert,	Garnett.
Smith, Delbert O.,	Valencia.

SENIORS, 7

JUNIORS.

Alexander, Homer Augustus,	Nickerson.
Annadown, Paul Vivian,	Baldwin.
Campbell, Watson,	Attica.
Doty, Claude Andrew,	Rosedale.
Earnest, Clarence,	Washington.
Henshall, James Edgar,	Osborne.
Monahan, Elmer Perry,	Baldwin.
Mundell, Minnette Smith,	Hutchinson.
Mundell, Walter N.,	Hutchinson.
Sheppard, Cyril E.,	Wellsville.
Wheeler, LeRoy Jay,	Wa Keeney.

JUNIORS, 11

SOPHOMORES.

Athay, Roland Milton,	Kiowa.
Broyles, Glen Hunt,	Lawrence.
Campbell, John R.,	Meade.
Chesky, Victor Ernest,	Nickerson.
Darland, Mary Edna,	Lawrence.
Duer, Guy Robert,	Nickerson.
Emerson, Herbert William,	Lawrence.
Fessenden, Ersel Meal,	Emporia.
Hazzard, Lawrence R.,	Wichita.
Hunt, Claude Judson,	Oswego.
Kelly, Joseph Patrick,	Kansas City, Mo.
LeMoine, Albert Napoleon,	Concordia.
Liston, Odus,	Altamont.
Lodge, Edmund Anderson,	Erie.
Sharp, Elwood Armstrong,	Council Grove.
Syfert, Alva Clyde,	Ashton.
Twyman, George Thomas,	Independence, Mo.

SOPHOMORES, 17

FRESHMEN.

Black, Donald Ray,	Columbus.
Burchfiel, Cecil M.,	Stafford.
Callen, Speer Woodson,	Junction City.
Capps, Murl T.,	Larned.
Castles, John E.,	Fort Morgan, Colo.
Dail, Oran Columbus,	Lawrence.
Dart, Raymond Osborne,	Kansas City.
Davis, Robert Crenshaw,	Kansas City.
Dixon, Otto J.,	Mound Valley.
Drake, Paul M.,	Lawrence.
Elliott, Russell Dunmire,	Lawrence.
Ferguson, James Taylor, Jr.,	Kansas City, Mo.

FRESHMEN—concluded.

Goldman, Abe Milton,	Kansas City, Mo.
Heberling, Maynard Hiram,	Wakarusa.
Kelley, James Adrian,	Kinsley.
Macy, Ernest W.,	Glen Elder.
Marchbanks, Howard E.,	Pittsburg.
Miller, Frank Porter,	Urich, Mo.
Moore, Joseph Earle,	Kansas City, Mo.
Morton, Paul H.,	Highland.
McKinlay, Chauncey Angus,	Wichita.
Rose, Charles W.,	Winfield.
Scanland, Lester Allen,	Kansas City, Mo.
Schwein, Bertha O.,	Lawrence.
Smith, Clarence,	Lawrence.
Smith, Lester A.,	Portis.
Sutton, Edgar M.,	Cawker City.
Trimble, Roy Ira,	Sterling.
Ward, Roscoe C.,	Belleville.
Weaver, Ross E.,	Concordia.
West, Harry Andrew,	Yates Center.

FRESHMEN, 31

SPECIALS.

Hecker, Friedrich Alexander,	Kansas City, Mo..
Smith, David Cicero,	Gadsden, Ala.
Kimble, Frank Elwood,	Mulvane.

SPECIALS, 3

Training School for Nurses.

CLASS OF 1913.

Bates, Mary K.,	Pulaski Heights, Ark.
Carter, Marian Ruth,	Warsaw, Mo.
Leonard, Lulu,	Earlton.
Pringle, Delilah,	Lawrence.

CLASS OF 1914.

Gove, Jessie L.,	Cherokee.
Haines, Ethel,	Altamont.
Hall, Zoa,	Elmdale.
Hussey, Birdie,	Lane.
Jeffries, Mary C.,	Lawrence.
Meyer, Ruth R.,	Columbus.
Woodward, Zeta,	Piper.

CLASS OF 1915.

Carpenter, Frances,	Lawrence.
Foster, Jessie,	Sedgwick.
Goodwin, Cordie,	Atchison.
Kizler, Clara,	Hillsboro.
Noble, Kate,	Lawrence.
Scott, Grace,	Hepler.
Zwick, Alice,	Lawrence.

PROBATIONERS.

Fletcher, Gladys,	Fowler.
Roberts, Jessie,	Lawrence.

School of Education.

GRADUATES.

Fagan, William Brock,	Parkville, Mo.
Gowans, Harry Wilson,	Lawrence.
Hall-Quest, Alfred Lawrence,	Parkville, Mo.
Harris, Walter Leslie,	Baxter Springs.
Hornor, Alfred Lindley,	Wichita.
Hutton, Arthur J.,	Winfield.
Lehman, Harvey C.,	Humboldt.
Miller, Lena V.,	Lawrence.
Moys, Cecilia Fay,	Lawrence.
McRuer, William Gladstone,	Parkville, Mo.
Olinger, Stanton,	Lawrence.
Passon, Rebecca,	Lawrence.
Sankee, Patti,	Lawrence.
Snoddy, George Samuel,	Emporia.
Wilson, Kathryn Marie,	Lawrence.
Wilson, Matthew H.,	Parkville, Mo.
Withington, Georgia Edna,	Lawrence.

GRADUATES, 17

SENIORS.

Allison, Ray Gilbert,	Clay Center.
Anderson, Mabel M.,	Gas.
Andrews, Mary E.,	Powhattan.
Atkinson, Vera,	Lawrence.
Babb, Alvin L.,	Lawrence.
Banker, Frances A.,	Russell.
Bates, Laura F.,	Garden City.
Bechtold, Anna D.,	Lawrence.
Black, Florence L.,	Lawrence.
Black, Frances I.,	Lawrence.
Bossi, John T.,	Arkansas City.
Bowler, Joseph L.,	Kansas City.
Bozell, Bess M.,	Beloit.
Brown, Helen E.,	Delphos.
Brown, Lois R.,	Troy.
Brunner, Ellen M.,	Onaga.
Buchanan, Nellie R.,	Lawrence.
Bunn, Zippa Lorraine,	Lawrence.
Burnett, Helen,	Hymer.
Clark, Edna M.,	Smith Center.
Clark, Gladys R.,	Fredonia.
Cook, Fern A.,	Wellington.
Coxedge, Lina,	Parsons.
Cressman, Ada B.,	Lawrence.
Croan, Melvin,	Kincaid.
Dague, John Frank,	Clifton.
Dale, LaVergne,	Lawrence.
Daum, Bessie,	Lawrence.
Daum, Kate,	Lawrence.
Davidson, Helen Irene,	Lawrence.
Degen, Helen,	Kansas City, Mo.
Dolbee, Myrtle E.,	Lawrence.
Dunaway, Elizabeth,	Oswego.
Dunlevy, Mabel M.,	Parsons.
Dupree, Louise M.,	Topeka.
Edwards, Wayne,	Chapman.
Eisele, Henry G.,	Eudora.
Estep, Alma R.,	Kansas City, Mo.

SENIORS—*continued.*

Fleeson, Elizabeth H.,	Sterling.
Fretz, Daisy,	Pratt.
Goldman, Irma,	Kansas City, Mo.
Grant, Mary A.,	Topeka.
Green, Bessie B.,	Coffeyville.
Greer, Mary E.,	Kansas City, Mo.
Hadley, Helena,	Glen Elder.
Harger, Lois,	Abilene.
Harper, Iva B.,	Lawrence.
Hoopes, Helen R.,	Lawrence.
Huff, Lucy H.,	Chapman.
Hull, Lois F.,	Nickerson.
Jacobs, John F.,	Athol.
Jones, Ernest C.,	Drexel, Mo.
Jones, Ethel A.,	Chanute.
Kennedy, Elizabeth M.,	Lawrence.
Ketchum, Pauline,	Lawrence.
Lawrence, James F.,	Lawrence.
Leisy, Ernest E.,	Moundridge.
Lightner, Jean,	Bucklin.
Lobsitz, Blanch,	Perry, Okla.
Long, Nina J.,	Madison.
Longabaugh, Cecil M.,	Lawrence.
Lovejoy, Edith E.,	Lawrence.
Lupton, Claribel L.,	Lawrence.
Malott, Anne C.,	Abilene.
Marek, Mary M.,	Halstead.
Mavity, Della,	Lyndon.
Miller, Alfa,	Lawrence.
Moody, Floyd E.,	Fort Scott.
Moses, Genevieve K.,	Carthage, Mo.
Myers, Dessie T.,	Lawrence.
McArthur, John C.,	Walton.
McCreath, Catherine E.,	Lawrence.
McCreath, Frances C.,	Lawrence.
McCune, Loleta,	Leavenworth.
McKinley, Walter J.,	Columbus.
McLellan, Marguerite H.,	Lawrence.
McMillin, Harrison C.,	Arkansas City.
McNeal, Ottie,	Norcatour.
Nowlin, Mabel R.,	Kansas City, Mo.
Neumuller, Beatrice,	Kansas City, Mo.
Oakley, Edna B.,	Kansas City, Mo.
Patterson, Oliver W.,	Lawrence.
Pendleton, Helen,	Lawrence.
Pratt, Ina M.,	Lawrence.
Ransom, Helen M.,	Lawrence.
Reding, Mary,	Lawrence.
Reed, Mildred B.,	Lawrence.
Rose, Helen,	Rosedale.
Savage, Anna,	Lawrence.
Schaeffer, Paul B.,	Oskaloosa.
Scheurer, Fred L.,	Lawrence.
Scheurer, Jacob D.,	Lawrence.
Schloss, Hazel,	Atchison.
Share, James T.,	Fort Scott.
Smith, Ina E.,	Lawrence.
Smyth, Jessie M.,	Eureka.
Spreier, Christine,	Pawnee Rock.
Starns, Olive,	Basehor.
Stearns, Fred G.,	Duquoin.
Stewart, Theodosia,	Hazelton.
Stiensmeyer, Charles G.,	Leavenworth.
Stubbs, Ansel H.,	Lawrence.
Tandy, M. Lucile,	Winfield.
Taylor, Grace J.,	Lyons.

SENIORS—*moncluded.*

VanDoren, Ruth,	Kansas City, Mo.
Warne, Joseph W.,	Wichita.
Weldon, Virginia A.,	Lawrence.
Wiley, Geneva P.,	Emporia.
Wood, Rachel A.,	Concordia.
Woodruff, Elizabeth Opal,	Lawrence.
Yeoman, Don O.,	Kingman.

SENIORS, 111

JUNIORS.

Allphin, Helen L.,	Lawrence.
Anderson, Bessie,	Lawrence.
Arnett, Ila Maud,	Lawrence.
Ayres, Rose E.,	Parsons.
Bailey, Bonnie D.,	Lawrence.
Barnard, Florence M.,	Osawatomie.
Beardsley, Cecil M.,	Russell.
Bechtel, Eva,	Hiawatha.
Bechtold, Edmund C.,	Lawrence.
Becktell, Bessie B.,	Macksville.
Bigelow, Edna N.,	Gardner.
Blakey, Letitia,	Pleasanton.
Braden, Clyde O.,	Sabetha.
Buchanan, Elma Ruth,	Lawrence.
Cady, Fanny A.,	Lawrence.
Cook, Eva M.,	Altamont.
Cox, Pearl,	Wichita.
Crawford, Annabella,	Lawrence.
Dingee, Minnie E.,	Minneapolis.
Drake, Esther L.,	Lawrence.
Dunbar, Lucy M.,	Hallowell.
Dunn, Violet W.,	Concordia.
Duston, Arthur W.,	Washington.
Dyer, Rose J.,	Baldwin.
Ewald, Mark S.,	Lawrence.
Freiburghouse, Elizabeth,	Hiawatha.
Fuqua, Florence F.,	Kansas City.
Gemberling, Grace E.,	Lancaster.
Givin, Grace E.,	Emporia.
Greene, Martha E.,	Kansas City, Mo.
Grove, Theodora,	Newton.
Grubbs, Ora F.,	Lawrence.
Gustafson, Alma T.,	Lawrence.
Harger, Ruth M.,	Abilene.
Hazelrigg, Vivian M.,	Burlington.
Healey, Florence,	Lawrence.
Hodgson, Helen,	Lawrence.
Hunter, Martha M.,	Lawrence.
Jenkins, Ollie M.,	Coffeyville.
Keeler, Dorothy Y.,	Lawrence.
Keith, Mary H.,	Lawrence.
Kennedy, Marjorie,	Lawrence.
Krebs, Anna M.,	Lawrence.
Lambe, Ruth,	Lawrence.
Landen, Elsie M.,	Lawrence.
Lear, Veta B.,	Columbus.
Light, Naomi,	Lawrence.
Lourey, Maude,	Frankfort.
Lucas, Meda,	Ashland.
Lux, Alta M.,	Topeka.
Mann, Lillie,	Grenola.
May, Charlotte K.,	Holton.
Miller, H. Ross,	Marion.
Milton, Pearl,	Stafford.
McAllister, Abel James,	Lawrence.

JUNIORS—concluded.

McDonald, Leroy P.,	McLouth.
McFarland, Bernice,	Lawrence.
McMillin, Stewart E.,	Wichita.
Neuschwanger, Amanda,	Osborne.
Neuschwanger, Sarah M.,	Osborne.
Nevin, Leila M.,	Lawrence.
Pilkington, Lillian E.,	Garnett.
Pilkington, Luella M.,	Garnett.
Pleasant, Eunice,	Lyndon.
Powell, Frances,	Lawrence.
Preshaw, Ada M.,	McPherson.
Rearick, Vida Vesta,	Osawatomie.
Richardson, Alma M.,	Lawrence.
Rigby, Frances,	Concordia.
Robbins, Meredith,	Russell.
Roberts, Margaret,	La Cygne.
Rule, Ruth B.,	Lawrence.
Schultz, Bernice E.,	Barnes.
Sealy, Marie P.,	<i>Independence, Mo.</i>
Shade, Florence M.,	Ellsworth.
Shelley, Velma E.,	Iola.
Shuck, Leota V.,	Kansas City.
Smith, Amarynthia J.,	<i>Louisville, Ky.</i>
Smith, Charles I.,	Sabetha.
Smith, William A.,	Cuba.
Snider, Juliet,	Fort Scott.
Spangler, Irma B.,	Lawrence.
Spotts, Vena,	Lawrence.
Strahm, Vivian S.,	Lawrence.
Thompson, Leslie R.,	Netawaka.
VanSlyck, Willard N.,	Topeka.
Venerable, Neosho B.,	Lawrence.
Ward, Dorothy S.,	Lawrence.
Wiley, Ralph C.,	Lawrence.
Wilhelm, Esther R.,	Lawrence.
Willitt, Jessie M.,	Hiawatha.
Woods, Mabel F.,	Burden.
Wren, Everett W.,	Kincaid.
Wright, Charles R.,	Winfield.
Yates, Blyden W.,	Lawrence.

JUNIORS, 95

SPECIALS.

Arnett, Mrs. Anna W.,	Lawrence.
Birch, Clarence E.,	Lawrence.
Brock, Olive,	Lawrence.
Carter, Ora O. J.,	Lawrence.
Connell, Eunice,	Bazine.
Cowgill, Martha E.,	Lawrence.
Day, Lewis Clinton,	Lawrence.
Dillard, Mary J.,	Lawrence.
Dingelstedt, Minnie,	Lawrence.
Dolman, Katherine,	Topeka.
Flagg, Laura,	Lawrence.
Glenn, Mamie,	Lawrence.
Hamilton, Idyl M.,	Weir.
Harper, Margaret,	Lawrence.
Haycraft, Edna A.,	Lawrence.
Haycraft, LaFleeta L.,	Lawrence.
Hopkins, Ophelia W.,	Lawrence.
Irwin, Gayl L.,	Lawrence.
Joyce, May,	Lawrence.
Kaho, John F.,	Topeka.
Kidder, Marion E.,	Lawrence.
Kiser, Florence,	Lawrence.

SPECIALS—*moncluded.*

Kuchera, Leora,	Belleville.
Lightfoot, Fairy,	Lawrence.
Lloyd, Charlotte C.,	Lawrence.
Metsker, Sonora T.,	Lawrence.
Nelson, Alma,	Lawrence.
Rabourne, Emma P.,	Lawrence.
Rearick, Anna J.,	Lawrence.
Sample, Sarah E.,	Lawrence.
Schwinley, Audrey E.,	Lawrence.
Singleton, Bonnie Jean,	Benedict.
Steele, Horace E.,	Lawrence.
Stevens, Vera E.,	Lawrence.
Stevens, Carrie F.,	Lawrence.
Stone, Sadie M.,	Lawrence.
Strahm, Estelle,	Sabetha.
Wenrich, Frances C.,	Lawrence.
Wetzel, Opal P.,	Lawrence.

SPECIALS, 39

Summer Session.

Abbey, Edward Lytton. Law,	Newton.
Adams, Eldridge Stevens. Anatomy,	Atchison.
Allison, Lawrence M. Economics, Physics, Shop, . . .	Lawrence.
Allison, Ray G. Education, Engl., Pol. Sci., Sociology, .	Clay Center.
Anderson, Lionel A. Law, Sociology,	Fairview.
Anderson, Mary. Piano,	De Soto.
Anderson, Olda. Education,	Lawrence.
Anderson, Ruth. Voice,	Lawrence.
Armstrong, Nan. Zoölogy,	Lawrence.
Asher, Alice Margaret. French, Journalism,	Lawrence.
Babb, Alvin Leroy. Physical Education,	Lawrence.
Babb, George Reuben. Physiology, Botany,	Lawrence.
Bailey, Reginald King. Physics, Chemistry,	Lawrence.
Baird, Maude. English, History,	Clay Center.
Baker, Edward S., Jr. Chemistry,	Lawrence.
Baker, Gazzelle Lily. Education,	Cherryvale.
Baker, Wilbur Arthur. Zoölogy,	Holton.
Barnes, Luther. Physics, Mathematics,	Lawrence.
Barnes, Nellie. English,	Kansas City, Mo.
Barnhill, Gilbert Earl. Chemistry, Physical Education, .	Rosedale.
Barrell, Fred. Mathematics, Shop,	Lawrence.
Barry, Bernese L. English, History, Physical Edu., . .	Sterling.
Baumgartner, A. Rachel. Education, Zoölogy,	Halstead.
Baxter, C. B. Law,	Pittsburg.
Beamer, Raymond. Zoölogy,	Lawrence.
Bechtold, Edmund Carl. Latin,	Lawrence.
Becktell, Jessie. Chemistry,	Macksville
Bechtold, Margaret A. Mathematics, Education, . . .	Lawrence.
Bedell, Florence J. Education,	Dodge City.
Beers, Catherine. Biology,	Evanston, Ill.
Bell, Grace. Piano, Harmony,	Lawrence.
Bennett, Emmet L. French, English, Political Sci., . .	Lawrence.
Bennett, Mary Jane. Latin, English,	Tulsa, Okla.
Bentson, Henry A. Economics, Sociology, Pol. Sci., . .	Ottawa.
Berthot, Stephanie. Education, Home Economics, . . .	Le Loup.
Beyer, Melinda Lynn. English,	Inman.
Bideau, Edith Mae. Home Economics, Geology, Eng., .	Chanute.
Biggs, George Dutton. Law,	Lawrence.
Blackmar, Winifred Margaret. Home Economics, . . .	Lawrence.
Borst, Margaret. History,	Topeka.
Bowler, Joseph L., Jr. Botany, History,	Lawrence.
Bowman, Estella. English,	Wathena.
Boynton, Roland E. Sociology, Economics,	Lawrence.
Bradley, Helen. English,	Norcatour.
Bramwell, Willis K. Law,	Belleville.
Briggs, Ruby Iola. Education,	Lawrence.
Bright, Ira J. Education, Psychology,	Lansing.
Brook, Elizabeth Cable. French,	Lawrence.
Brook, Isaiah John. Law,	Lawrence.
Brooks, Martin Kahao. Education, English,	Lawrence.
Brown, Alice L. History, Economics,	Lawrence.
Brown, Lulu Marie. Latin, Sociology,	Ottawa.
Brown, Reuben Henry. Chemistry,	Quindaro.
Buchanan, Ruth. Zoölogy,	Lawrence.
Bunn, Zippa Lorraine. English,	Lawrence.
Burnett, Clanrold A. Law,	Girard.
Burke, Esther Margaret. Piano,	Lawrence
Burns, William Earl. Physics,	Winfield.
Burrough, Phyllis Marguerite. Education, English, . .	Lawrence.
Butts, Etta. French, Latin,	Fredonia.
Byerly, Elizabeth. Physiology,	Fredonia.

Cadwell, Harold V.	Chemistry,	Lawrence.
Campbell, Louis J.	Mathematics,	Lawrence.
Carlton, C. H.	Law,	Garden City.
Chapell, Harriet.	English, Education, History,	Kansas City.
Chapple, James Melvin.	Mathematics, Shop,	Troy.
Clark, Clement Francis.	Law,	Wichita.
Clark, Edna M.	Education, English,	Smith Center.
Coats, Charles M.	French,	Chanute.
Coe, John Edwin.	Physics, Chemistry,	Lawrence.
Cole, Perry C.	Chemistry,	Clay Center.
Coleman, Aaron.	Law,	Castleton.
Coleman, Herbert Rockwood.	Chemistry,	Lawrence.
Colin, Edward Cecil.	Chemistry, English,	Argonia.
Colyer, E. E.	Education,	Dighton.
Conwell, H. H.	Mathematics,	Albuquerque, N. M.
Cook, Mary Anna.	German,	Oswego.
Cook, Julius Edgar.	Education, History,	Ness City.
Cotter, Georgia Jane.	English, Sociology,	Kansas City, Mo.
Counts, George Sylvester.	French, Edu., Soc., Biology,	Baldwin.
Cox, Elizabeth.	English, Economics, Political Science,	Wellsville.
Crawford, Annabelle.	English, Physical Education,	Lawrence.
Crawley, Oma.	History,	Dighton.
Cressman, Ada Beatrice.	French, English, Education,	Lawrence.
Croan, Melvin.	Entomology, History,	Kincaid.
Croyle, Harley I.	German, Psychology,	New Cambria.
Curl, Howard E.	French, German,	Lawrence.
Curtis, Paul Everard.	Chemistry,	Lawrence.
Curtiss, Bessie Irene.	Education,	Lawrence.
Dains, Alice H.	Spanish,	Lawrence.
Dalton, Beatrice Louella.	German,	Lawrence.
Dalton, Nelle Marvin.	Education, Sociology, Piano,	Lawrence.
Dalton, Mrs. J. B.	Piano,	Lawrence.
Darrah, Margaret Rebecca.	Edu., English, Journ.,	McPherson.
Dart, Edna Rachel.	Home Economics,	Lawrence.
Daum, Kate.	Home Economics, Education,	Lawrence.
Davidson, Helen Irene.	English, History,	Lawrence.
Davidson, Roy.	English, Physical Education,	Nickerson.
Davis, Frank E.	Pub. Speak., English, Hist., Eco.,	Lawrence.
Davis, Margaret Rogers.	French, History,	Lawrence.
Davis, Philip L.	Physiology,	Lawrence.
Dershem, Elsie.	English,	Baldwin.
Devlin, John A.	Education,	Fort Scott.
Devlin, May.	Education, Sociology,	Fort Scott.
Deweese, Charles Max.	Mathematics, History,	Lenexa.
Dillard, Mary J.	English, Education,	Lawrence.
Dodderidge, Kenneth.	Chemistry,	White City.
Doggett, Walter Martin.	Law,	Leoti.
Dolbee, Carrie.	Education, Mathematics,	Lawrence.
Dolbee, Cora.	Journalism,	Lawrence.
Dotzour, Grover C.	Mathematics,	McPherson.
Douglass, Beulah.	Piano,	Lawrence.
Doyle, Dorothy.	English, Economics,	Council Grove.
Draper, Florence.	Physiology, Sociology,	Kansas City.
Dreier, Albert A.	Education,	Morrill.
Drunagel, Emma.	German,	Pittsburg.
Dunlevy, Mabel M.	Education, Economics, Sociology,	Parsons.
Dunn, Ella Mae.	History, English, Education	St. John.
Dupree, Louise M.	History, Education,	Topeka.
Eaton, Lola Earle.	History, Latin,	Lawrence.
Edie, Kate Ella.	Education,	Lawrence.
Eisenmayer, Walter C.	Law,	Springfield, Mo.
Elliott, James Ryan.	French, History, English, Phil.,	Linn.
Elliott, Russell D.	Zoölogy,	Lawrence.
Ellis, Katherine.	Education,	Pratt.
Emery, George W.	Botany,	Wetmore.
Emery, Walter T.	Entomology,	Lawrence.
Emick, W. Earl.	Law,	Miltonvale.
Emmett, Louis H.	Economics, Shop,	Lawrence.

Esping, C. Lydia.	History, English, Mathematics,	Lindsborg.
Estey, Helen Sewell.	English, Latin,	Topeka.
Fallis, Erma.	History,	Dighton.
Faulkner, James Thomas.	Economics, Education, . .	Lawrence.
Fisher, Osa O.	English,	La Crosse.
Fleming, Louise.	Education,	Tecumseh.
Flinn, Ruby Vee.	Economics, Edu., English, Soc.,	Chanute.
Foote, Herbert B.	Biology,	Ottawa.
Ford, Creola.	Piano,	Lawrence.
Fox, Margaret.	Piano,	Lawrence.
Francis, Erle Seth.	Law,	Westmoreland.
French, Eileen.	English,	Pittsburg.
Frye, Maggie L.	Education, Botany,	Kansas City.
Gaily, Carrie Elma.	English,	Sterling.
Garnett, Ida Drake.	English, Economics,	Lawrence.
Garnsey, Edith.	Piano, Harmony,	Kansas City, Mo.
Garrett, Irene May.	Education, English, German, . .	Lawrence.
Geiger, Addie.	English,	Ottawa.
Gibbons, Eula.	Harmony,	Lawrence.
Gibson, Admund Jennings.	English, History,	McCune.
Gilchrist, Irene A.	Latin, French,	Wichita.
Giles, Ethel Margaret.	Education,	Abilene.
Glasecock, Helen Edith.	Geology, Botany, Journalism,	Kansas City.
Gleed, Augustus Clarence.	Chemistry,	Lawrence.
Goertz, P. S.	Chemistry,	Hillsboro.
Goldman, Irma.	Physiology,	Kansas City, Mo.
Gorham, Maude.	Botany,	Garden City.
Grant, Effie E.	Music,	Worcester, Mass.
Graves, Geraldine.	Piano,	Lawrence.
Green, Bessie B.	Mathematics,	Coffeyville.
Greer, Estellene.	English, Journalism,	Kansas City, Mo.
Griffin, Edward Lawrence.	Botany, Chemistry,	Lawrence.
Grignard, Emile E.	Bacteriology, Water Analysis, .	Lawrence.
Gunthorp, Horace.	Zoölogy,	Monmouth, Ill.
Hadley, Walter Scott.	English, History,	North Branch.
Hague, Florence.	Biology,	Kingfisher, Okla.
Hainbach, Charles J.	French, Shop,	Chanute.
Hall-Quest, Alfred Lawrence.	Psychology,	Fulton, Mo.
Hand, Hugh Hamlin.	Law,	Parsons.
Hanes, Anna Victoria.	Chemistry,	Sageeyah, Okla.
Hanger, J. H.	Education, Sociology,	Meriden.
Harbeson, John Wesley.	Economics, History,	Perry.
Harper, Margaret.	Music,	Lawrence.
Harrah, Ezra Clarence.	Botany, Psychology,	Douglass.
Harris, Lawrence T.	Drawing, Shop,	Lawrence.
Hassett, Florence.	Piano, Harmony,	Lawrence.
Hatcher, Minnie L.	Psychology, History,	Wichita.
Hayes, Helen M.	Geology,	Lawrence.
Heck, Oscar B.	Education, Geology,	Harper.
Heilmann, Edward L.	Shop,	Carbondale.
Helm, Charles Frank.	Chemistry,	La Junta, Colo.
Henderson, Frank B.	Mathematics,	Lawrence.
Henry, Victor George.	Law,	Wichita.
Hess, J. Raymond.	Chemistry,	Topeka.
Hodgson, Eva.	Geology, History,	Ottawa.
Hodgson, Ruth.	English, German,	Lawrence.
Hoffman, R. Lee.	Sociology, Botany,	Ellsworth.
Hoopes, Helen Rhoda.	English,	Lawrence.
Hopkins, Edna.	Piano,	Lawrence.
Hornbaker, Clyde O.	Law,	Castleton.
Horner, Robert Messenger.	Physics,	Sterling.
Hoskins, Elmer Ray.	Zoölogy,	Lawrence.
Housholder, Victor H.	Zoölogy,	Columbus.
Hron, Ralph Preston.	Chemistry,	Guthrie, Okla.
Huff, Lucy H.	Mathematics, Education,	Chapman.
Hull, Blanche Edith.	English, Botany,	Lawrence.
Hutton, Arthur.	Economics, English,	Winfield.
Huxman, W. A.	Law,	Pretty Prairie.

Hyre, Edna M.	Chemistry, Physical Education, . . .	Lawrence.
Ingels, Pauline.	Education, Sociology,	Lawrence.
Irwin, E. Ira.	Law,	<i>Guthrie, Okla.</i>
Ise, Mary.	Education, Latin,	Lawrence.
Isely, Dwight.	Entomology,	Wichita.
Jackson, Ruby A.	History, Journalism,	Lawrence.
Jennings, Henry Ralph.	Entomology,	McPherson.
Johns, Floyd M.	Physics, English,	Glasco.
Johnson, Mrs. Gertrude.	Sociology, History, English,	Severy.
Johnson, Leroy C.	History, English, Journalism,	Savonburg.
Johnson, William Scott.	Botany,	Lawrence.
Johnston, Annie B.	English,	Meade.
Johnston, Arthur C.	English,	Lawrence.
Jones, Clella.	English,	Independence.
Jones, Earl M.	Shop,	Franklin.
Jones, Ernest Clare.	German,	Lawrence.
Jones, Ethel Ann.	Chemistry,	Chanute.
Jones, LeRoy J.	Shop,	<i>Des Moines, Iowa.</i>
Jones, William I.	Law,	Lawrence.
Karbach, Edgar.	Chemistry,	Kansas City.
Karnes, Fay.	Piano,	Lawrence.
Keith, Eleanor Margaret.	English, French,	<i>Byars, Okla.</i>
Keith, Mary Helen.	English, Physical Education,	Lawrence.
Kelsall, Charles A.	Geology,	Reno.
Kenny, Gertrude.	Home Economics,	Lawrence.
Kent, Mabel.	Latin,	Lawrence.
Ketchum, Pauline.	Journalism, Education, Botany,	Lawrence.
Kezer, Charles L.	Economics, Education,	<i>Stillwater, Okla.</i>
Killarney, Margaret.	Education,	Atchison.
Kimball, Webster W.	Law,	Parsons.
Klamm, Arthur G.	Chemistry, History,	Basehor.
Klaumann, Charles H.	Zoölogy,	Iola.
Kliever, Herman S.	Education,	Newton.
Koontz, Elizabeth.	Home Economics, Physical Edu.,	Ottawa.
Krueger, Alfred P.	Education,	Atchison.
Kruse, Schiller.	Chemistry,	Lawrence.
Laming, Edith.	English,	Tonganoxie.
Lane, Oscar J.	Physics, Physical Education,	Baldwin.
LaRue, Mamie.	Psychology, Sociology, French,	Lawrence.
Lee, Floyd B.	Education, Mathematics, Economics,	Osawatomie.
Lewis, Gilbert M.	Law,	Kinsley.
Lewis, Kelton.	Law,	Kinsley.
Lobsitz, Blanche.	English,	<i>Perry, Okla.</i>
Logan, William T.	Education, Sociology, English,	<i>Knob Noster, Mo.</i>
Longabaugh, Cecil M.	English, Education,	Lawrence.
Longabaugh, Hazel J.	Voice, Technic,	Lawrence.
Loomis, Arthur K.	Education, English, Mathematics,	Peabody.
Louis, Sister Mary.	English, History,	Wichita.
Lovejoy, Beryl H.	Botany,	Sabetha.
Lovejoy, Owen H.	Entomology, Botany, Phys. Edu.,	Lawrence.
Lowe, Willoughby M.	Law,	Newton.
Lowry, Ethel M.	Mathematics, Drawing,	Columbus.
Lucas, Meda F.	Education, History, English,	Ashland.
Lukan, Charlotte.	Piano,	Lawrence.
Lukan, Gladys.	Piano,	Lawrence.
Luke, Ittai A.	Zoölogy,	Lawrence.
Lupton, Edwin H.	Mathematics,	Lawrence.
Lyßer, Ernest E.	Botany, Chemistry,	Paola.
Macy, Ernest W.	Botany,	Lawrence.
Magatagan, George C.	Chemistry, French,	Chanute.
Magill, Helen L.	Botany, Mathematics,	Sabetha.
Malleis, Otto.	Chemistry,	Halstead.
Mallory, Arthur E.	Entomology,	Scott City.
March, Lucie.	Biology,	Lawrence.
Marchbanks, Howard E.	Biology,	Pittsburg.
Maris, Ward H.	Economics, Journalism,	<i>Kansas City, Mo.</i>
Marshall, George H.	Economics, History, Journalism,	Garnett.
Marshall, Ruth.	Piano,	Lawrence.

Mathews, Mary.	English, Education,	<i>Knoxville, Iowa.</i>
Matthews, W. I.	Physics,	<i>Fredonia.</i>
Mavity, Della M.	English,	<i>Lyndon.</i>
May, Charlotte.	Spanish, English,	<i>Holton.</i>
Mercer, Sylvester W.	English, Shop,	<i>Greenleaf.</i>
Merryman, Mabel.	Latin, English, Sociology,	<i>Hamilton, Mo.</i>
Merwin, Bruce W.	Physics, Education, Phys. Edu.,	<i>Lawrence.</i>
Messenger, Frank D.	Chemistry, Shop,	<i>Lawrence.</i>
Metcalf, Helen G.	History,	<i>Lawrence.</i>
Metsker, Sonora T.	English, Hist., Journalism, Soc.,	<i>Lawrence.</i>
Miles, Kate B.	French, Latin,	<i>Salina.</i>
Miller, Alfe.	Biology,	<i>Lawrence.</i>
Miller, H. Ross.	Chemistry,	<i>Marion.</i>
Miller, Raymond F.	Botany,	<i>Emporia.</i>
Miller, Warren M.	Histology,	<i>Sabetha.</i>
Mock, Benjamin R.	Chemistry, Mathematics,	<i>Lawrence.</i>
Monfort, Louise.	Spanish, Education,	<i>Riverside, Cal.</i>
Moon, Arthur.	Law,	<i>Lawrence.</i>
Moore, William A.	Geology, Biology,	<i>Lawrence.</i>
Morgan, Ivy B.	English,	<i>Sylvan Grove.</i>
Morris, Genevieve.	Piano,	<i>Lawrence.</i>
Morrish, Dimis M.	German, English, Phys. Edu.,	<i>Oberlin.</i>
Morrow, James C., Jr.	Law,	<i>Washington.</i>
Morrow, Lena M.	Home Economics, English,	<i>Washington.</i>
Morrow, William M.	Law,	<i>Washington.</i>
Morton, William M.	Law,	<i>St. Joseph, Mo.</i>
Mott, Ethel B.	German,	<i>Harper.</i>
Moys, Cecilia Fay.	Piano,	<i>Lawrence.</i>
Mulson, Fred W.	Mathematics, Botany,	<i>Yates Center.</i>
Murphy, Beulah V.	German,	<i>Lawrence.</i>
Murphy, Nettie.	Piano,	<i>Lawrence.</i>
Myers, Ethel.	German,	<i>Lawrence.</i>
Myers, Warren J.	Chemistry, Psychology,	<i>Hutchinson.</i>
McCammon, Constance L.	French,	<i>Lawrence.</i>
McCannon, Josephine.	Piano,	<i>Lawrence.</i>
McCanles, Lulu L.	Piano,	<i>Lawrence.</i>
McCarty, Alston M.	Law,	<i>Emporia.</i>
McClelland, Mrs. Laura R.	English,	<i>Holton.</i>
McCluggage, Robert T.	Law,	<i>Derby.</i>
McConnaughay, Maude.	Economics, History, Soc.,	<i>St. John.</i>
McCormick, Clarence.	Chemistry,	<i>Arkansas City.</i>
McCulloch, Irene A.	Biology,	<i>Frankfort.</i>
McDaniels, Sidonia.	French, Journalism,	<i>Berwick, La.</i>
McKelvy, Esther.	History, English,	<i>Waterville.</i>
McKenzie, Mrs. Ada.	Journalism,	<i>Lawrence.</i>
McKittrick, Bess J.	Education,	<i>Wilson.</i>
McLean, Willis W.	History,	<i>Mexico City, Mexico.</i>
McNaughton, Alicia B.	English,	<i>Tonganoxie.</i>
McNeal, Ottie.	Economics, Sociology, Education,	<i>Norcat.</i>
Nagle, Ethel H.	Biology,	<i>Kansas City, Mo.</i>
Neiswender, Ethel V.	Journalism, Pathology,	<i>North Topeka.</i>
Nelson, Alfred L.	Mathematics,	<i>Troy.</i>
Nelson, Camilla.	German,	<i>Lawrence.</i>
Neumuller, Beatrice.	English,	<i>Kansas City, Mo.</i>
Newton, Fred O.	Economics, Physical Edu., Soc.,	<i>Nickerson.</i>
Nolan, Amelia.	English, Geology,	<i>Lamont, Okla.</i>
Nowlin, Mabel R.	Physiology,	<i>Kansas City, Mo.</i>
Noyes, Elmira E.	Education,	<i>Portsmouth, Va.</i>
Noyes, Mayrea.	Home Economics, Education,	<i>Portsmouth, Va.</i>
Ockerblad, N. F.	Physiology,	<i>Kansas City.</i>
Olinger, Stanton.	Education, Sociology,	<i>Lawrence.</i>
Ollson, Artna M.	Biology,	<i>Kansas City, Mo.</i>
Olney, Avery F.	Economics, History,	<i>Lawrence.</i>
Olson, Henry N.	Mathematics,	<i>Lindsborg.</i>
Oman, Carl.	Chemistry,	<i>Garnett.</i>
O'Roke, Earl C.	Entomology,	<i>Sabetha.</i>
Orr, Stella.	Education, English,	<i>Oswego.</i>
Oyler, Thos. Curry.	Chemistry,	<i>Kirwin.</i>

Palmer, Frances E.	History, English,	Pittsburg.
Pampel, Pauline.	Economics, Sociology, History, . .	Vermilion.
Parker, Zula W.	Journalism, English,	Olathe.
Pauly, Clyde H.	Mathematics, English,	Lawrence.
Peairs, Ruth.	Piano,	Lawrence.
Pendleton, Helen.	Piano,	Lawrence.
Peters, Rupert.	Biology,	Kansas City.
Petz, Gretchen.	Piano,	Lawrence.
Petz, Robert.	German,	Lawrence.
Phillips, John Foster.	Mathematics,	Winfield.
Pilkenton, Will.	German, Mathematics,	Lawrence.
Pipes, Zelda.	Piano,	Lawrence.
Pope, Jessie I.	Geology,	Oologah, Okla.
Powell, Clara.	Voice,	Lawrence.
Powell, Murat H.	Physics, Shop,	Pittsburg.
Pratt, Benjamin H.	Biology,	Topeka.
Pressler, Katherine.	German, Sociology,	Fort Scott.
Preyer, Mary.	Piano, Harmony,	Lawrence.
Protsch, Reba.	Piano,	Lawrence.
Rabourn, Emma P.	Journalism, English,	Lawrence.
Ragsdale, Evalyn.	History, Sociology, English, . . .	Lawrence.
Rankin, Dessa A.	Piano,	Axtell.
Rankin, Roy.	Chemistry, Botany,	Lawrence.
Raymond, Ola Bowman.	Chemistry,	Newton.
Rearick, Anna J.	History, Geology, English, German,	Lawrence.
Rearick, Vida Vesta.	English,	Lawrence.
Redmond, Roscoe R.	Law,	Ottawa.
Reed, J. C.	Education, Physical Education, . . .	Salina.
Regier, Cornelius C.	Economics,	Moundridge.
Reid, Roderick V.	Law,	Lawrence.
Ridgway, Wayne.	Latin, English,	Kansas City.
Ridings, Ola M.	Physiology, English,	Salina.
Riggs, Henry C.	Education,	Lawrence.
Ringer, Vera.	Biology,	Ottawa.
Robbins, Olive.	French, Voice,	Russell.
Roberts, John W.	English, Education,	Peabody.
Robinson, James G.	Physics, Chemistry,	Viola.
Koot, Charles B.	Physiology,	Lawrence.
Rudolph, Rose.	Piano,	Lawrence.
Rufener, Louis A.	French,	Elmo.
Rule, Ruth B.	English, Physical Education,	Lawrence.
Runnels, Annie.	Economics, Psychology, Journalism,	Kansas City, Mo.
Sandborn, Lynne.	English, Home Economics,	Blue Rapids.
Scholastica, Sister Mary.	English, History,	Wichita.
Schroeder, Clara.	German, History,	Enid, Okla.
Schroeder, J. P.	Chemistry,	McPherson.
Sellards, Mary W.	Latin, French, History,	Burlingame.
Shafer, Annie N.	Latin,	Olathe.
Sheedy, Agnes M.	Psychology, English, Piano,	Fredonia.
Sheedy, Josephine.	Piano,	Fredonia.
Shirling, Albert E.	Biology,	Kansas City, Mo.
Shorey, Marion L.	Biology,	Milwaukee, Wis.
Smith, Amarynthia.	Home Economics,	Lawrence.
Smith, Frank H.	Sociology, English,	Lawrence.
Smith, Lucile.	Piano,	Lawrence.
Smith, O'Connor C.	Education,	Fort Scott.
Speckmann, Clara M.	Botany,	Waterville.
Speckmann, Phoebe R.	German, Education,	Lawrence.
Spotts, Vena.	Education, English,	Lawrence.
Sprague, W. F.	Chemistry,	Fredonia.
Stanton, Guy K.	Entomology,	Lawrence.
Steeper, Bert.	Law, Sociology,	Lawrence.
Steeper, Hubert D.	Education,	Abilene.
Stevens, Bertha.	Piano,	Lawrence.
Stevens, Phil.	Piano,	Lawrence.
Stevens, Francis H.	Journalism,	Lawrence.
Stevenson, Arthur E.	Physics,	Lawrence.
Stone, Henry N.	Psychology, Journalism,	Lawrence.

Stone, Sadie M.	Education,	Lawrence.
Strahm, Vivian S.	Mathematics, Education, Botany,	Lawrence.
Taylor, Ruby.	Physiology,	Fort Scott.
Teeter, Edna.	Home Economics,	Lawrence.
Thomas, Edith.	Piano,	Lawrence.
Thomas, Ernest A.	Mathematics, German, Phys. Edu.,	Carbondale.
Thomas, Raymond S.	Chemistry, Shop,	Lawrence.
Thompson, Earl L.	Mathematics,	Lawrence.
Thompson, Leila M.	Voice,	Coffeyville.
Thompson, Martha A.	Latin, French,	Kansas City.
Thompson, Stella M.	Home Economics, Chem., Edu.,	Parkville, Mo.
Thompson, Rodney W.	Economics,	Baldwin.
Thomson, John W.	History, English,	Irving.
Tinker, Ida.	Piano,	Lawrence.
Tippin, Ernest E.	Botany, Physical Education, . .	Sterling.
Titus, R. W.	Chemistry, Education,	Lawrence.
Tudor, Herbert O.	Sociology,	Holton.
Tupper, Mary E.	Chemistry, Philosophy,	Lawrence.
Turner, Mabel O.	English,	Effingham.
Twente, John W.	Education,	Baxter Springs.
VanArsdale, John.	Mathematics,	Conway Springs.
Van der Vries, Edward.	German, Education, Soc., . .	Lawrence.
Van Vickle, Harriet Anna.	English,	Lawrence.
Veirs, C. R.	Chemistry, Shop,	Lawrence.
Venerable, Elaine N.	Mathematics, Sociology, . .	Lawrence.
Venne, Alfred M.	Physical Education,	Chillico, Okla.
Vickers, Mrs. Belle F.	Education,	Liberal.
Waddell, Fern.	Biology,	Kingfisher, Okla.
Walton, Carrie L.	Mathematics, English,	Wellington.
Walton, Lo Reine.	Piano,	Lawrence.
Watson, Lella.	French, History,	Hutchinson.
Weber, Oliver W.	Law,	Lawrence.
Weir, Otho J.	Physics,	Clafin.
Welch, Erroll M.	Chemistry,	Lawrence.
Weldon, Virginia A.	Education,	Lawrence.
Wenkheimer, Alberta.	Education,	Belpre.
Wenkheimer, Gladys K.	English,	Belpre.
Wenrich, David H.	Biology,	Lawrence.
Wenrich, Frances C.	Education, English,	Lawrence.
Wesley, John B.	Physics, Phys. Education, . .	Stafford.
White, Esther H.	Biology,	Hebron, Iowa.
Wikoff, Howard H.	Law,	Oneida.
Williams, Bertha.	Voice,	Lawrence.
Wilson, Matthew H.	Psychology, Education,	Lawrence.
Wilson, Orville T.	Botany,	Emporia.
Wilson, W. B.	Biology,	Ottawa.
Wineinger, Viola M.	Physiology,	White Cloud.
Wineinger, William W.	Chemistry,	White Cloud.
Withington, Georgia.	Education,	Lawrence.
Wolcott, Ethel G.	Botany,	Lawrence.
Woodbury, Blanche.	English,	Lawrence.
Woodman, Sidney M.	Chemistry, Sociology,	Netawaka.
Woodruff, Regina.	Education,	Lawrence.
Woolsey, Carrie I.	Education, History,	Lawrence.
Woolsey, Helen.	Counterpoint,	Lawrence.
Woolverton, Mary E.	Edu., Sociology, Economics, .	Abilene.
Worrall, Hazel E.	Mathematics, Physical Education,	Oberlin.
Woulfe, Robert J.	Economics, Political Science, .	Newton.
Wright, Cowles.	History, Economics, English, . .	Lawrence.
Wright, Ida B.	English,	Topeka.
Wunsch, Amanda A.	Psych., Home Economics, Engl.,	Argonia.
Wyeth, Addy B.	Education, English,	Lawrence.
Wynne, R. May.	Psychology, Education, Sociology, .	Norton.
Young, Annie P.	Journalism,	Lawrence.
Young, Ben P.	Education, Psychology, Sociology, .	Kingman.
Ziegler, W. Ray.	Law,	Lawrence.
Zimmerman, Reba M.	English,	Lawrence.

Health Officers' School.

(In connection with the Summer School of 1912.)

Aldrich, Dr. H. L.,	Caney.
Babb, Dr. Geo. F.,	Topeka.
Blair, Dr. E. James,	Lawrence.
Brickell, Dr. J. B.,	Americus.
Brown, Dr. Chas. E.,	Leavenworth.
Bundy, Dr. Wm. E.,	Hugoton.
Campbell, Dr. F.,	Kansas City.
Crumbine, Dr. S. J.,	Topeka.
Day, Dr. Lewis W.,	Lawrence.
DeTar, Dr. M.,	Kinsley.
Dillingham, Dr. W. R.,	Morland.
Dillon, Dr. A. C.,	Osborne.
Emley, Dr. S. C.,	Kansas City.
Evans, Dr. Milton T.,	Sedan.
Eye, Dr. G. E.,	Marion.
Faulkner, Dr. J. T.,	Lansing.
Foed, Dr. A. F.,	Hutchinson.
Fortney, Dr. A. M.,	De Soto.
Fulton, Dr. J. S.,	Kiowa.
Gardner, Dr. H. S.,	Lawrence.
Forrest, Dr. A. K.,	Winfield.
Garvin, Dr. F. A.,	Augusta.
Grove, Dr. W. T.,	Eureka.
Greider, Dr. W. H.,	Topeka.
Haas, Dr. K. C.,	Hays.
Haskins, C. A.,	Lawrence.
Henson, Dr. J. H.,	Mound Valley.
Hopper, Dr. W. L.,	Fort Scott.
Kenney, Dr. C. S.,	Norton.
Lee, Dr. J. G.,	Eudora.
Leslie, Dr. C. B.,	Meade.
Montgomery, Dr. J. C.,	Manhattan.
Moore, Dr. D. B.,	Osage City.
McConnell, Dr. W. C.,	Lawrence.
McIrvin, Dr. W. C.,	Atwood.
McKee, Dr. S.,	Leavenworth.
McNalley, Dr. M.,	Michigan Valley.
Nye, Dr. W. W.,	Hiawatha.
O'Donnell, Dr. A.,	Ellsworth.
Pigg, Dr. G. R.,	Bird City.
Ressler, Dr. C. E.,	Anthony.
Reynolds, Dr. S. E.,	Clay Center.
Scott, Dr. W. J.,	Sharon Springs.
Siever, Dr. C. M.,	Holton.
Sippy, Dr. J. J.,	Belle Plaine.
Tilford, Dr. J. F.,	Topeka.
Wells, Dr. W. H.,	Coffeyville.
Wickersham, Dr. E. C.,	Independence.
Young, Dr. R. C.,	Arkansas City.

Enrollment, 1912-'13.

SCHOOLS.	MEN.	WOMEN.	TOTAL.
The Graduate School.....	77	42	119
The College of Liberal Arts and Sciences..	713	574	1,287
Senior Class	86	118	204
Junior Class	107	114	221
Sophomore Class	130	112	242
Freshman Class	292	183	475
Specials	98	47	145
School of Engineering.....	391	1	392
Senior Class	76	.....	76
Junior Class	90	.....	90
Sophomore Class	88	.....	88
Freshman Class	125	1	126
Specials	12	.....	12
The School of Fine Arts.....	11	150	161
Senior Class .....	.....	17	17
Junior Class	1	25	26
Sophomore Class	1	18	19
Freshman Class	2	26	28
Specials	7	64	71
The School of Law.....	214	1	215
Senior Class	61	.....	61
Middle Class	75	1	76
Junior Class	71	.....	71
Specials	7	.....	7
The School of Pharmacy.....	77	1	78
Senior Class	24	.....	24
Junior Class	49	.....	49
Sophomore Class	3	1	4
Specials	1	.....	1
The School of Medicine.....	65	24	89
Fourth Year	6	1	7
Third Year	10	1	11
Second Year	16	1	17
First Year	30	1	31
Specials	3	.....	3
Nurses .....	.....	20	20
The School of Education.....	60	202	262
Graduates	10	7	17
Seniors	27	84	111
Juniors	18	77	95
Specials	5	34	39
Total enrollment, regular session.....	1,608	995	2,603
Names counted twice.....	140	201	341
	1,468	794	2,262
The Summer Session.....	221	247	468
Current students in Summer Session.....	94	90	184
	127	157	284
TOTAL REGISTRATION, 1912-'13.....	1,595	951	2,546

Classification of Students.

BY KANSAS COUNTIES.

Allen	28	Greenwood	16	Pawnee	7
Anderson	17	Harper	8	Phillips	4
Atchison	26	Harvey	31	Pottawatomie	17
Barber	9	Haskell	2	Pratt	6
Barton	11	Jackson	16	Rawlins	1
Bourbon	31	Jefferson	13	Reno	51
Brown	25	Jewell	10	Republic	14
Butler	22	Johnson	37	Rice	21
Chase	1	Kingman	12	Riley	3
Chautauqua	4	Labette	30	Rooks	7
Cherokee	29	Lane	3	Rush	6
Clark	8	Leavenworth	44	Russell	13
Clay	18	Lincoln	8	Saline	19
Cloud	20	Linn	31	Scott	1
Coffey	10	Logan	5	Sedgwick	66
Crowley	37	Lyon	27	Seward	1
Crawford	28	Marion	20	Shawnee	48
Decatur	9	Marshall	31	Sheridan	3
Dickinson	41	McPherson	36	Smith	9
Doniphan	23	Meade	5	Stafford	11
Douglas*	695	Miami	14	Sumner	26
Edwards	10	Mitchell	2	Thomas	4
Elk	8	Montgomery	40	Trego	6
Ellis	5	Morris	6	Wabaunsee	16
Ellsworth	14	Nemaha	29	Wallace	3
Finney	6	Neosho	23	Washington	25
Ford	11	Ness	9	Wichita	1
Franklin	31	Norton	7	Wilson	22
Geary	14	Osage	22	Woodson	5
Gove	1	Osborne	6	Wyandotte	100
Graham	3	Ottawa	10		

BY STATES.

Arkansas	3	Mexico	1	Pennsylvania	1
California	2	Michigan	1	Tennessee	1
Colorado	11	Missouri	191	Texas	2
Idaho	1	Montana	1	Utah	1
Illinois	3	Nebraska	6	Virginia	2
Indiana	1	New Mexico	3	Wisconsin	1
Iowa	3	New York	1		
Kansas	2,264	Ohio	1		
Louisiana	1	Oklahoma	42		
Massachusetts	1	Oregon	1		
					2,546

* A large number of students whose names appear in this catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

Acknowledgments.

Gifts to the Library, March, 1912, to March, 1913.

	<i>Vols.</i>
American Bar Association, Baltimore, Md.....	1
Association of American Universities.....	3
Backhouse, I. W., Sunderland, England.....	1
Bailey, Prof. E. H. S., Lawrence.....	2
Bank of Commerce and Trust Company, San Diego, Cal.....	3
Beck, W. G., Columbus, Mo.....	1
Beecher, Miss Mary, Lawrence.....	2
Bennett, Rev. F. M., Salt Lake City, Utah.....	37
Blackmar, Prof. F. W., Lawrence.....	2
Bookwalter, Mr. John W., Springfield, Ohio.....	1
Boynton, Prof. A. J., Lawrence.....	4
Brown, Mr. E. E., Lawrence.....	1
Bumgardner, Dr. E., Lawrence.....	9
Carruth, Prof. W. H., Lawrence.....	2
Chalkley, Mrs. T. H., Lawrence.....	2
Chicago Board of Trade, Chicago.....	1
Codding, Mr. J. K., Lansing.....	1
Collins, Mrs. Ella C., Lawrence (bequest).....	15
Connecticut Bureau of Labor Statistics, Hartford, Conn.....	3
Craig, Mr. J. H., Washington, D. C.....	1
Department of Education, Ontario, Canada.....	3
Factory Inspector, Harrisburg, Pa.....	9
Folks, Mr. W. K., Linwood.....	1
Gleed, Mr. Charles S., Topeka.....	17
Griffith-Stillings Press, Boston, Mass.....	1
Hedges, Mr. Job E., New York.....	1
Howell, Mr. R. V., Emporia.....	1
Hyde, Miss Ida, Lawrence.....	1
Illinois Bureau of Labor Statistics, Springfield, Ill.....	4
Illinois State Historical Library, Springfield, Ill.....	2
Iowa Commissioner of Labor Statistics, Des Moines, Iowa.....	1
Iowa State Geological Survey.....	1
Interstate Commerce Commission, Washington, D. C.....	3
Jefferson Physical Laboratory, Cambridge, Mass.....	1
Jordan, Mr. H. E., Lawrence.....	2
Kansas State Historical Society, Topeka.....	5
Kansas State Library, Topeka.....	24
Kansas Tax Commission, Topeka.....	1
Kegan, Paul, French Trübner and Co., London.....	1
Kunz, Mr. G. F., New York.....	2
Lee, Mr. Samuel H., Pierre, S. D.....	1
Library of Congress, Washington, D. C.....	4
McClung, Prof. C. E., Swathmore, Pa.....	50
McClurg, A. C., & Co., Chicago.....	2
Maine Board of State Assessors, Bangor, Me.....	2
Marvin, Prof. F. O., Lawrence.....	1
Massachusetts State Board of Insanity, Boston.....	1
Massachusetts Bureau of Statistics, Boston.....	3
Michigan Commission of Labor, Lansing.....	4
Millis, Prof. H. A., Lawrence.....	2
Missouri and Kansas Telephone Co., Kansas City, Mo.....	1
Missouri Botanical Garden, St. Louis, Mo.....	2
Missouri Bureau of Mines and Mining, Jefferson City, Mo.....	1
Morgan, Miss Rose, Lawrence.....	26
Nation, Mr. J. M., Auditor of State, Topeka.....	1
National Academy of Sciences, Washington, D. C.....	1
Nebraska Auditor of Public Accounts, Lincoln, Neb.....	5
Nebraska State Historical Society, Lincoln, Neb.....	1

New Hampshire State Tax Commission, Concord, N. H.....	1
New Jersey State Tax Commission, Trenton, N. J.....	4
New York Commission of Labor, Albany, N. Y.....	11
New York Life Insurance Co., St. Paul, Minn.....	4
New York State Library, Albany, N. Y.....	118
New York State Tax Commission, Albany, N. Y.....	4
Ohio Bureau of Labor Statistics, Columbus, Ohio.....	1
Ohio Geological Survey, Columbus, Ohio.....	1
Public Service Commission, New York.....	13
Ritzius, Prof. Gustaf, Stockholm, Sweden.....	24
Robbins, R. C., Hamilton, Mass.....	1
Rush, Miss Maud, Lawrence (bequest).....	12
Sayre, Prof. L. E., Lawrence.....	29
Seipt, Prof. A. A., Lawrence.....	1
Sheldon, Mr. W. D., Philadelphia, Pa.....	1
Smithsonian Institution, Washington, D. C.....	11
Snow, Mrs. F. H., Lawrence.....	50
Stephens, Miss Kate, New York.....	4
Strong, Dr. Augustus H., Rochester, N. Y.....	2
Strong, Chancellor Frank, Lawrence.....	1
Strong, Henry R., St. Louis, Mo.....	2
Sturgis & Walton Co., New York.....	1
Superintendent of Documents, Washington, D. C.....	1
Teubner, B. G., Leipzig, Germany.....	1
Theological Seminary of the Presbyterian Church in the United States....	1
Trustees of the British Museum, London, England.....	6
United States Bureau of Education, Washington, D. C.....	7
United States Department of Agriculture, Washington, D. C.....	38
United States Geological Survey, Washington, D. C.....	1
United States National Museum, Washington, D. C.....	8
United States Naval Observatory, Washington, D. C.....	3
University of Kansas Alumni Association, Lawrence.....	2
Utah Board of Commissioners on Revenue and Taxation, Salt Lake City..	1
Vermont Tax Department, Burlington, Vt.....	3
Vilas, Mrs. W. F., Madison, Wis.....	1
War Department, Washington, D. C.....	2
Washington Labor Commission, Olympia, Wash.....	3
Wiedemann, Miss Louise, Lawrence.....	10
Wilcox, Prof. A. M., Lawrence.....	1
Wilson, Mr. David, Ayr, Scotland.....	1
Wisconsin State Historical Society, Madison, Wis.....	2

Newspapers and Periodicals.

DAILIES.

Abilene Daily Reflector.....	Abilene.
Arkansas City Daily Traveler.....	Arkansas City.
Atchison Daily Champion	Atchison.
Atchison Daily Globe.....	Atchison.
Augusta Daily Gazette.....	Augusta.
Beloit Daily Call.....	Beloit.
Chanute Daily Tribune.....	Chanute.
Cherryvale Journal	Cherryvale.
Christian Science Monitor (Miss Cora Taylor, Lawrence)	Boston, Mass.
Clay Center Dispatch.....	Clay Center.
Daily Gazette	Lawrence.
Daily Republican	Cherryvale.
Daily Republican	Clay Center.
Deseret Evening News.....	Salt Lake City, Utah.
El Dorado Daily Republican.....	El Dorado.
Emporia Gazette	Emporia.
Erie Daily Sentinel.....	Erie.
Evening Free Press	Winfield.
Evening Herald	Ottawa.
Evening Kansan-Republican	Newton.
Evening Review and Garnett Journal-Plainealer, Evening Star	Garnett.
Fort Scott Daily Republican.....	Independence.
Fort Scott Tribune	Fort Scott.
Gazette Globe	Fort Scott.
Great Bend Tribune.....	Kansas City.
Hutchinson Daily Gazette	Great Bend.
Hutchinson News	Hutchinson.
Independence Daily Reporter.....	Hutchinson.
Iola Daily Register.....	Independence.
Joplin Morning Tribune.....	Iola.
Kansas City Journal.....	Joplin, Mo.
Lawrence Daily Journal-World.....	Kansas City, Mo.
Leavenworth Post	Lawrence.
Leavenworth Times	Leavenworth.
McPherson Daily Republican.....	Leavenworth.
Neodesha Daily Sun.....	McPherson.
Norton Daily Telegram.....	Neodesha.
Ottawa Daily Republic.....	Norton.
Parsons Daily Eclipse.....	Ottawa.
Parsons Daily Sun.....	Parsons.
Salina Daily Union	Parsons.
Salina Evening Journal	Salina.
Topeka Daily Capital	Salina.
Topeka State Journal	Topeka.
Wichita Beacon	Topeka.
Wichita Eagle	Wichita.
Winfield Daily Courier.....	Wichita.
	Winfield.

WEEKLIES.

Abilene Democrat	Abilene.
Advocate	El Dorado.
Advocate-Democrat	Marysville.
A. H. T. A. Weekly News.....	St. Paul.
Alden Journal	Alden.
Allen Enterprise	Allen.
Alma Enterprise	Alma.

WEEKLIES—continued.

Alma Signal	Alma.
Altamont Journal	Altamont.
Alta Vista Journal.....	Alta Vista.
Alton Empire	Alton.
America: a Catholic Review.....	New York City, N. Y.
American Economist	New York City, N. Y.
Americus Greeting	Americus.
Anthony Bulletin	Anthony.
Anthony Republican	Anthony.
Arcadia Sunlight	Arcadia.
Argonia Clipper	Argonia.
Arlington Enterprise	Arlington.
Ashland Clipper	Ashland.
Atchison Church Visitor.....	Atchison.
Atlanta Journal	Atlanta.
Atlanta Independent	Atlanta, Ga.
Barber County Index.....	Medicine Lodge.
Barnard Bee	Barnard.
Barnes Chief	Barnes.
Barton County Democrat	Great Bend.
Baxter Springs News.....	Baxter Springs.
Belle Plaine News.....	Belle Plaine.
Belleville Telescope and Belleville Freeman.....	Belleville.
Beloit Gazette	Beloit.
Bern Gazette	Bern.
Bison Bee	Bison.
Blue Mound Sun.....	Blue Mound.
Bluff City News.....	Bluff City.
Bonner Springs Chieftain.....	Bonner Springs.
Breeders Gazette	Chicago, Ill.
Bronson Pilot	Bronson.
Bucklin Banner	Bucklin.
Burden Times	Burden.
Burlingame Enterprise	Burlingame.
Burlington Independent	Burlington.
Burlington Republican	Burlington.
Burns Citizen	Burns.
Burr Oak Herald.....	Burr Oak.
Caldwell Advance	Caldwell.
Caldwell News	Caldwell.
Caney Chronicle	Caney.
Caney News	Caney.
Canton Pilot	Canton.
Carbondale Post	Carbondale.
Cassoday Times	Cassoday.
Catholic Advance	Wichita.
Cawker City Ledger.....	Cawker City.
Central Baptist	St. Louis, Mo.
Central Kansas News-Democrat.....	Lyons.
Centralia Journal	Centralia.
Champion	Norton.
Chanute Times	Chanute.
Chase County Leader.....	Cottonwood Falls.
Chase Register	Chase.
Cherokee County Republican.....	Baxter Springs.
Chetopa Advance	Chetopa.
Chetopa Clipper	Chetopa.
Christian Messenger	Lindsborg.
Christian Register	Boston, Mass.
Christian Science Sentinel.....	Boston, Mass.
Clafflin Clarion	Clafflin.
Clearwater Courant	Clearwater.
Coats Courant	Coats.
Colby Tribune	Colby.
Coldwater Talisman	Coldwater.
Colony Free Press.....	Colony.

WEEKLIES—*continued.*

Comet	Courtland.
Commoner	Lincoln, Neb.
Corning Gazette	Corning.
Council Grove Guard.....	Council Grove.
Council Grove Republican.....	Council Grove.
County Capital	St. John.
Courier Democrat	Seneca.
Courtland Register	Courtland.
Cuba Daylight	Cuba.
Dearing Sentinel	Dearing.
Democrat Opinion	McPherson.
Democrat	Wichita.
De Soto Eagle Eye.....	De Soto.
Dexter Dispatch	Dexter.
Dickinson County News.....	Abilene.
Dodge City Kansas Journal.....	Dodge City.
Douglass Tribune	Douglass.
Downs News	Downs.
Downs Times	Downs.
Dresden Sunflower	Dresden.
Effingham New Leaf.....	Effingham.
El Dorado Weekly Republican.....	El Dorado.
Elk City Sun.....	Elk City.
Elk County Citizen.....	Howard.
Ellinwood Leader	Ellinwood.
Ellis County News-Republican.....	Hays City.
Ellis Review-Headlight	Ellis.
Ellsworth Messenger	Ellsworth.
Ellsworth Reporter	Ellsworth.
Enterprise	Utica.
Enterprise Push	Enterprise.
Erie Record	Erie.
Erie Weekly Sentinel.....	Erie.
Eskridge Tribune Star.....	Eskridge.
Eudora Weekly News.....	Eudora.
Eureka Herald	Eureka.
Everest Enterprise	Everest.
Fairview Enterprise	Fairview.
Fall River Times.....	Fall River.
Farm, Field and Garden.....	London, England.
Farmer and Stockman.....	Kansas City, Mo.
Farmer's Mail and Breeze.....	Topeka.
Farmer's Voice	Clyde.
Florence Bulletin	Florence.
Fort Leavenworth News.....	Fort Leavenworth.
Fredonia Herald	Fredonia.
Free Press-Public Opinion.....	Osage City.
Friedensbote (Der)	St. Louis, Mo.
Galena Weekly Republican.....	Galena.
Garden City Herald	Garden City.
Garden City Telegram	Garden City.
Garden Plain News	Garden Plain.
Gardner Gazette	Gardner.
Girard Press	Girard.
Glasco Sun	Glasco.
Goff Advance	Goff.
Goodland Republic	Goodland.
Gospel Trumpet	Anderson, Ind.
Gove County Advocate.....	Quinter.
Gove County Record.....	Grinnell.
Gove County Republican-Gazette.....	Gove City.
Grant County Republican.....	New Ulysses.
Great Bend Tribune.....	Great Bend.
Greeley County Republican.....	Tribune.
Greenleaf Sentinel	Greenleaf.
Grenola Leader	Grenola.

WEEKLIES—*continued.*

Gridley Light	Gridley.
Hamilton County Republican.....	Syracuse.
Hanover Democrat	Hanover.
Hanover Herald	Hanover.
Harper Advocate	Harper.
Harper Sentinel	Harper.
Harvard Lampoon	Cambridge, Mass.
Harveyville Monitor	Harveyville.
Haskell County Republican.....	Santa Fe.
Haven Journal	Haven.
Hays Free Press.....	Hays City.
Herald (Der)	Newton.
Herald of Gospel Liberty.....	Dayton, Ohio.
Herbert's Weekly	Hiawatha.
Herington Sun	Herington.
Herington Times	Herington.
Herndon Nonpareil	Herndon.
Holton Recorder	Holton.
Holton Signal	Holton.
Holyrood Banner	Holyrood.
Horton Headlight-Commercial	Horton.
Howard Courant	Howard.
Hoxie Sentinel	Hoxie.
Hoyt Sentinel	Hoyt.
Hugoton Hermes	Hugoton.
Humboldt Semiweekly Herald.....	Humboldt.
Humboldt Union	Humboldt.
Huron Herald	Huron.
Hutchinson Wholesaler	Hutchinson.
Illustrated London News (Mrs. J. H. Chalkley, Lawrence)	New York City, N. Y.
Independent	Attica.
Independent (Prof. E. H. S. Bailey, Lawrence)...	New York City, N. Y.
Independent	White Water.
Indian Leader	Haskell Institute, Lawrence.
Inman Review	Inman.
Irving Leader	Irving.
Jacksonian	Cimarron.
Jefferson County Tribune.....	Oskaloosa.
Jetmore Republican	Jetmore.
Jewell County Monitor.....	Mankato.
Jewell County Republican.....	Jewell City.
Junction City Republic.....	Junction City.
Junction City Sentinel.....	Junction City.
Junction City Union.....	Junction City.
Kanopolis Journal	Kanopolis.
Kansan	Concordia.
Kansas Commoner	Wichita.
Kansas Farmer	Topeka.
Kansas Industrialist	Manhattan.
Kansas News-Democrat	Hiawatha.
Kansas Optimist	Jamestown.
Kansas Star	Olathe.
Kanskaské-Rozhledy	Wilson.
Kearny County Advocate.....	Lakin.
Kingman Journal	Kingman.
Kinsley Graphic	Kinsley.
Kinsley Mercury	Kinsley.
Kiowa County Signal	Greensburg.
Kiowa News Review	Kiowa.
Labor Leader	Baltimore, Md.
La Crosse Republican	La Crosse.
La Cygne Weekly Journal	La Cygne.
La Cygne Weekly Record	La Cygne.
La Follette's Weekly Magazine.....	New York City, N. Y.
Larned Chronoscope	Larned.

WEEKLIES—*continued.*

Latham Mirror	Latham.
Lawrence Democrat	Lawrence.
Lawrence Germania	Lawrence.
Leader Tribune	Englewood.
Leavenworth Tribune	Leavenworth.
Lebanon Times	Lebanon.
Lebo Star	Lebo.
Lecompton Sun	Lecompton.
Lenora News	Lenora.
Liberal Democrat	Liberal.
Lincoln Republican	Lincoln.
Lincoln Sentinel	Lincoln.
Lindsborg News and Lindsborg Record	Lindsborg.
Lindsborgs Posten	Lindsborg.
Linn County Democrat	Mound City.
Linn County Republic	Mound City.
Logan County News	Winona.
Logan Republican	Logan.
Long Island New Leaf	Long Island.
Longton Gleaner	Longton.
Louisburg Herald	Louisburg.
Lucas Independent	Lucas.
Luray Herald	Luray.
Lyons Republican	Lyons.
McCune Herald	McCune.
Macksville Enterprise	Macksville.
McLouth Times	McLouth.
McPherson Freeman	McPherson.
McPherson Weekly Republican	McPherson.
Madison Spirit	Madison.
Manhattan Nationalist	Manhattan.
Manhattan Republic	Manhattan.
Marion Record	Marion.
Market World and Chronicle	New York City, N. Y.
Marquette Tribune	Marquette.
Marshall County News	Marysville.
Meade County News	Meade.
Medicine Lodge Crescent	Medicine Lodge.
Melvorn Review	Melvorn.
Meriden Ledger	Meriden.
Miami Republican	Paola.
Minneapolis Better Way	Minneapolis.
Minneapolis Messenger	Minneapolis.
Moline Advance	Moline.
Moran Herald	Moran.
Moundridge Journal	Moundridge.
Mound Valley Herald	Mound Valley.
Mound Valley Journal	Mound Valley.
Mount Hope Weekly Clarion	Mount Hope.
Mulvane News	Mulvane.
Municipal Record	San Francisco, Cal.
Muscotah Record	Muscotah.
Narka News	Narka.
Natoma Independent	Natoma.
Neodesha Register	Neodesha.
Neosho Falls Post	Neosho Falls.
Ness County Echo	Ness City.
Ness County News	Ness City.
Neue Kansas Staats-Zeitung	Kansas City, Mo.
New Era	Formoso.
News Chronicle	Scott City.
News-Courant	Strong City.
Newton Journal	Newton.
Nickerson Argosy	Nickerson.
Norton County News	Norton.
Norton Courier	Norton.

WEEKLIES—*continued.*

Oakley Graphic	Oakley.
Oberlin Herald	Oberlin.
Oberlin Times	Oberlin.
Observer-Enterprise	Pleasanton.
Olathe Independent	Olathe.
Olathe Mirror	Olathe.
Olathe Register	Olathe.
Onaga Herald	Onaga.
Osage County Chronicle.....	Burlingame.
Osawatomie Graphic	Osawatomie.
Osborne County Farmer.....	Osborne.
Osborne County News.....	Osborne.
Oskaloosa Independent	Oskaloosa.
Oskaloosa Times	Oskaloosa.
Ottawa Guardian	Ottawa.
Ottawa Weekly Herald.....	Ottawa.
Outlook (Mrs. J. H. Chalkley, Lawrence).....	New York City, N. Y.
Overbrook Citizen	Overbrook.
Palmer Index	Palmer.
Parker Message	Parker.
Peabody Gazette	Peabody.
Peabody Herald	Peabody.
People's Herald	Lyndon.
People's Sentinel	Glen Elder.
People's Voice	Wellington.
Perry Mirror	Perry.
Phillips County Post.....	Phillipsburg.
Pittsburg Kansan	Pittsburg.
Plainville Gazette	Plainville.
Plainville Times	Plainville.
Pleasanton Herald	Pleasanton.
Portis Independent	Portis.
Pratt Republican	Pratt.
Pratt Union	Pratt.
Press	Kansas City.
Progress	Minneapolis, Minn.
Progressive Herald	Lawrence.
Protection Post	Protection.
Public (E. E. Soderstrom, Emporia).....	Chicago, Ill.
Randolph Enterprise	Randolph.
Republic	Kansas City.
Republican Gazette	Gove City.
Republican-Register	Washington.
Republic City News.....	Republic City.
Republic County Democrat.....	Belleville.
Reveille-New Era	Hill City.
Rexford News	Rexford.
Robinson Index	Robinson.
Rooks County Record.....	Stockton.
Russell Reformer	Russell.
Sabetha Herald	Sabetha.
Sabetha Star	Sabetha.
Saint George News.....	St. George.
Saint John Weekly News.....	St. John.
Saint Mary's Eagle Journal.....	St. Marys.
Saint Mary's Star.....	St. Marys.
Salina Sun	Salina.
Salina Union	Salina.
Santa Fe Monitor.....	Santa Fe.
Savonburg Record	Savonburg.
Scammon Miner	Scammon.
Scottsville Advance	Scottsville.
Seneca Tribune	Seneca.
Severyite	Severy.
Sherman County Record.....	Goodland.
Smith County Journal.....	Smith Center.

WEEKLIES—concluded.

Soldier Clipper	Soldier.
South Haven New Era.....	South Haven.
South Kansas Tribune.....	Independence.
Spearville News	Spearville.
Spring Hill New Era.....	Spring Hill.
Square Deal	Atwood.
Stafford County Republican	Stafford.
Stafford Courier	Stafford.
Sterling Kansas Bulletin.....	Sterling.
Sterling News	Sterling.
Stockton Review	Stockton.
Summerfield Sun	Summerfield.
Sylvan Grove News.....	Sylvan Grove.
Sylvia Sun	Sylvia.
Thayer News	Thayer.
Tiller and Toiler.....	Larned.
Times	Clay Center.
Times	Independence.
Topeka Plaindealer	Topeka.
Trego County Reporter.....	Wa Keeney.
Tribune	Morganville.
United Presbyterian	Pittsburg, Pa.
Valley Center Index.....	Valley Center.
Valley Falls New Era.....	Valley Falls.
Van Guard	St. Louis, Mo.
Vermillion Times	Vermillion.
Vörwarts	Hillsboro.
Waldrun Argus	Waldrun.
Walnut Eagle	Walnut.
Walnut Valley Times.....	Walnut Valley.
Wamego Reporter	Wamego.
Wamego Weekly Times.....	Wamego.
Washington Palladium	Washington.
Waterville Telegraph	Waterville.
Wathena Republican	Wathena.
Wathena Times	Wathena.
Waverly Gazette	Waverly.
Weekly Kansas Chief.....	Troy.
Weir City Journal.....	Weir City.
Wellsville Globe	Wellsville.
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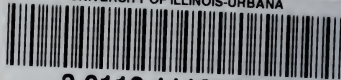
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